

STUDER A812

Operating and Service Instructions



Prepared and edited by STUDER INTERNATIONAL TECHNICAL DOCUMENTATION
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SICHERHEIT UND ERSTE HILFE**SICHERHEIT**

Durch Entfernen von Gehäuseteilen, Abschirmungen etc. werden stromführende Teile freigelegt. Aus diesem Grunde müssen die folgenden Sicherheitsvorschriften unbedingt beachtet werden:

1. **Eingriffe in ein Gerät**
dürfen nur von Fachpersonal vorgenommen werden.
2. **Vor Entfernen von Gehäuseteilen:**
Gerät ausschalten und vom Netz trennen.
3. **Bei geöffnetem Gerät:**
Netzteil- oder Motorkondensatoren mit einem passenden Widerstand entladen.
- Bauteile grosser Leistung, wie Leistungstransistoren und -widerstände sowie Magnetspulen und Wickelmotoren erst nach dem Abkühlen berühren.
4. **Servicearbeiten bei geöffnetem, unter Spannung stehendem Gerät:**
- Keine blanken Schaltungsteile berühren
- Isolierte Werkzeuge verwenden
- Metallene Halbleitergehäuse nicht berühren, da sie hohe Spannungen aufweisen können.

ERSTE HILFE (bei Stromunfällen)

1. **Bei einem Stromunfall die betroffene Person raschmöglichst vom Strom trennen:**
- Durch Ausschalten des Gerätes
- Ausziehen oder Unterbrechen der Netzzuleitung
- Betroffene Personen mit isoliertem Material (Holz, Kunststoff) von der Gefahrenquelle wegstossen
- Nach einem Stromunfall sollte immer ein Arzt aufgesucht werden.

ACHTUNG

EINE UNTER SPANNUNG STEHENDE PERSON DARF NICHT BERÜHRT WERDEN, SIE KÖNNEN DABEI SELBST ELEKTRISIERT WERDEN!

2. **Bei Bewusstlosigkeit des Verunfallten:**
- Puls kontrollieren,
- bei ausgesetzter Atmung künstlich beatmen,
- Seitenlagerung des Verunfallten und Arzt verständigen.

SAFETY AND FIRST AID**SAFETY**

There are no user serviceable components inside the equipment, live parts are laid open when removing protective covers and shieldings. It is essential therefore to ensure that the subsequent safety rules are strictly observed when performing service work or repairs.

1. **Servicing of electronic equipment**
must be performed by qualified personnel only.
2. **Before removing covers:**
Switch off the equipment and unplug the mains cable.
3. **When the equipment is open:**
- Discharge power supply- and motor capacitors through a suitable resistor.
- Components, that carry heavy electrical loads, such as power transistors and resistors as well as solenoid coils and motors should not be touched before a cooling off interval, as a precaution to avoid burns.
4. **Servicing unprotected and operating equipment:**
- Never touch bare wires or circuitry
- Use insulated tools only
- Never touch metal semiconductor cases because they may carry high voltages.

FIRST AID (in case of electric shock)

1. **Separate the person as quickly as possible from the electric power source:**
- by switching off the equipment,
- unplugging or disconnecting the mains cable,
- pushing the person away from the power source by using dry insulating material (such as wood or plastic).
- After having sustained an electric shock, always consult a doctor.

WARNING:

DO NOT TOUCH THE PERSON OR HIS CLOTHING BEFORE POWER IS TURNED OFF, OTHERWISE YOU STAND THE RISK OF SUSTAINING AN ELECTRIC SHOCK AS WELL!

2. **If the person is unconscious**
- Check the pulse,
- reanimate the person if respiration is poor,
- lay the body down and turn it to one side, call for a doctor immediately.

SÉCURITÉ ET PREMIERS SECOURS**SÉCURITÉ**

Si les couvercles de protection sont enlevés, les parties de l'appareil qui sont sous tension ne sont plus protégées. Il est donc d'une nécessité absolue de suivre les instructions suivantes:

1. **Les interventions dans les appareils électriques**
doivent être faites uniquement que par du personnel qualifié
2. **Avant d'enlever les couvercles de protection:**
Couper l'interrupteur principal et débrancher le câble secteur.
3. **Après avoir enlevé les couvercles de protection:**
- Les condensateurs de l'alimentation et des moteurs doivent être déchargés à l'aide d'une résistance appropriée.
- Il est prudent de laisser refroidir les composants de haute puissance, par ex.: transistors de puissance, résistances de puissances de même que des électroaimants et les moteurs de bobinage.
4. **S'il faut que l'appareil soit sous tension pendant les réglages internes:**
- Ne jamais toucher les circuits non isolés
- Travailler seulement avec des outils isolés

PREMIERS SECOURS (en cas d'électrocution)

1. **Si la personne est dans l'impossibilité de se libérer:**
- Couper l'interrupteur principal
- Couper le courant
- Repousser la personne de l'appareil à l'aide d'un objet en matière non conductrice (matière plastique ou bois)
- Après une électrocution, consulter un médecin.

ATTENTION

NE JAMAIS TOUCHER UNE PERSONNE QUI EST SOUS TENSION, SOUS PEINE DE SUBIR ÉGALEMENT UNE ÉLECTROCUTION

2. **En cas de perte de connaissance de la personne électrocutée:**
- Contrôler le pouls
- Si nécessaire, pratiquer la respiration artificielle
- Mettre l'accidenté sur le côté latérale et consulter un médecin.

1. GENERAL INFORMATION

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1.1 Quick Reference Description

With its compact and rugged design, its system flexibility, and the high operating convenience afforded by its multiple microprocessors, the STUDER A812 tape recorder satisfies all requirements of a universal studio machine, be it in radio, television, or recording studios, theater or film productions, auditoriums, or scientific institutes.

Its salient features are:

- Highly stable die-cast aluminum alloy chassis for the tape deck, the head-block, and other assemblies.
- Hall-commutated brushless DC capstan motor with capacitive tachometer for highly accurate tape speed, and outstanding acceleration and deceleration rates.
- Fast tape deck with high spooling speeds and gentle processing of the tapes through electronically controlled tape tension, 2 controlled AC spooling motors, and noncontacting tape tension sensor.
- Precision electronic tape counter with real-time indication. Photoelectric scanning of the guide roller rotation.
- Easy editing: motor-assisted with variable spooling speed (SHUTTLE mode). For cueing in spooling mode, the high end of the frequency response can be lowered (switch selectable).
- Monitor speaker below the tape deck cover or in the penthouse.
- Manually operable shield above the reproduce heads; can remain closed in spooling mode.

Due to the enormous system flexibility, a suitable A812 version is available for any type of application:

- The basic version is available as a mono, 2-channel (optionally with embedded time code track) or stereo machine with or without external instrument panel.
- Can be operated in horizontal, inclined, or vertical position.
- Four tape speeds can be selected: 3.75 / 7.5 / 15 / 30 ips (programmable).
- The inputs and outputs are balanced and floating and can be ordered with or without input/output transformers.
- Selector switch for two tape types with different calibration data, and changeover switch for NAB/CCIR equalization.
- Zero locator and transfer locator for up to 3 addresses as standard features.
- Equipped with varispeed control (variable tape speed).
- Output selector keys on models equipped with VU meters: INPUT, REPRO and SYNC (playback via record head).
- VU-meter panel with safe/ready changeover, record level potentiometers.
- Line voltage selectable from 100 to 140 V / 200 to 240 VAC, $\pm 10\%$, 50...60 Hz.
- Can be remote controlled from a terminal or personal computer via an RS232 interface (option).
- Connection facilities for fader start circuit, parallel and serial remote control.

High operating convenience afforded by a control system comprising several microprocessors:

- The last operating state is saved when the machine is switched off: tape counter, locator addresses, tape speed, settings of the input and output selectors. STOP mode is automatically activated when the machine is powered on again.
- Drop in by pressing only the REC key in play mode (internally programmable)
- Drop out by pressing PLAY during a recording.
- Reduced spooling speed (LIBRARY WIND):
A lower spooling speed can be selected for producing pancakes to be saved in the library.
- TAPE DUMP (waste basket mode with disabled take-up motor).
- LAP TIME (second time level for measuring individual tape segments without influencing the main tape counter).
- Alignment of the audio parameters via the microprocessor.
- Programmable keys (softkeys): any function selected from a list of about 100 functions can be assigned to any key, for example:

Fader

Local keyboard inhibited, only fader start possible.

Rehearse

Simulation of an electronic cut.

Auto mute

Automatic muting of the audio channels in spooling mode, etc.

These keys feature special recesses for self-adhesive labels.

- Internal self-test system for the main functions, supported by error diagnosis:
- Automatic power-on test, some of the functions are periodically repeated.

1.2 Standard Versions

Model		Order Number
A812-1	<ul style="list-style-type: none"> ■ Machine for 1/4" tape with full-track erase head ■ Without channel selector ■ Monitor speaker built into tape deck cover ■ Input and output equipped with transformers ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 3.75 / 7.5 / 15 ips 	60.118.12011
A812-1 VU	<ul style="list-style-type: none"> ■ Machine for 1/4" tape. ■ Penthouse equipped with: VU-meter with channel selector Monitor speaker ■ Input and output without transformer ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 3.75 / 7.5 / 15 ips 	60.118.12012
A812-0.75	<ul style="list-style-type: none"> ■ Machine for 1/4" tape, stereo, with 0.75 mm track separation and full-track erase head ■ No channel selector ■ Monitor speaker built into tape deck cover ■ Inputs and outputs equipped with transformers ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 3.75 / 7.5 / 15 ips 	60.118.12021
A812-0.75 VU	<ul style="list-style-type: none"> ■ Machine for 1/4" tape, stereo, with 0.75 mm track separation and overlapping erase head ■ Penthouse equipped with: VU-meters with channel selector Monitor speaker ■ Inputs and outputs without transformers ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 3.75 / 7.5 / 15 / 30 ips 	60.118.12022
A812-2 F	<ul style="list-style-type: none"> ■ Machine for 1/4" tape, stereo, with 2 mm track separation and full-track erase head ■ No channel selector ■ Monitor speaker built into tape deck cover ■ Inputs and outputs equipped with transformers ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 3.75 / 7.5 / 15 ips 	60.118.12030

Model		Order Number
A812-2/2	<ul style="list-style-type: none"> ■ Machine for 1/4" tape, stereo/2-channel, with 2 mm track separation and overlapping erase head ■ Penthouse equipped with: Channel selectors Monitor speaker ■ Inputs and outputs without transformers ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 3.75 / 7.5 / 15 ips 	60.118.12031
A812-2/2 VU	<ul style="list-style-type: none"> ■ Machine for 1/4" tape, stereo/2-channel, with 2 mm track separation and overlapping erase head ■ Penthouse equipped with: VU-meters with channel selector Monitor speaker ■ Inputs and outputs without transformers ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 3.75 / 7.5 / 15 / 30 ips 	60.118.12032
A812-2	<ul style="list-style-type: none"> ■ Machine for 1/4" tape, stereo/2-channel, with 2 mm track separation and 2-track erase head (no time code erasure) ■ No channel selectors ■ Monitor speaker built into tape deck cover ■ Inputs and outputs equipped with transformers ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 3.75 / 7.5 / 15 ips 	60.118.12033
A812-2 VU	<ul style="list-style-type: none"> ■ Machine for 1/4" tape, stereo/2-channel, with 2 mm track separation and 2-track erase head (no time code erasure) ■ Penthouse equipped with: VU-meters with channel selector Monitor speaker ■ Inputs and outputs without transformers ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 3.75 / 7.5 / 15 / 30 ips 	60.118.12034
A812-2 TC	<ul style="list-style-type: none"> ■ Machine for 1/4" tape, stereo/2-channel, with 2 mm track separation, with embedded time code track and 2-track erase head ■ Penthouse equipped with: Channel selectors Time code channel selector Monitor speaker ■ Inputs and outputs equipped with transformers ■ Maximum reel diameter 317.5 mm (12.5") ■ Tape speeds 7.5 / 15 / 30 ips 	60.118.12041

Model	Order Number
A812-2 TC VU	60.118.12042
<ul style="list-style-type: none">■ Machine for 1/4" tape, stereo/2-channel, with 2 mm track separation, embedded time code track, and 2-track erase head■ Penthouse equipped with:<ul style="list-style-type: none">VU-meters with channel selectorTime code channel selectorMonitor speaker■ Inputs and outputs without transformers■ Maximum reel diameter 317.5 mm (12.5")■ Tape speeds 7.5 / 15 / 30 ips	
Additional Manuals	
Operating and service instruction manual (German)	10.27.0331
Operating and service instruction manual(English)	10.27.0341

1.3 Options**Order Number**

Mono/stereo switch	20.812.902.00
Mono/stereo switch with test generator	20.812.903.00
Serial interface RS232 (for operation with TLS4000)	20.812.885.00
Serial interface SMPTE/EBU (RS422 and RS232)	20.812.886.00
Interface for noise reduction system for 2 channels	20.812.945.00
Interface for parallel channel remote control up to S/N 1999	20.812.938.00
Interface for serial remote control and remote counter	20.812.888.00
Mechanical operating hours meter	20.812.865.00
Tape scissors for installation in the headblock	20.812.891.00
Tape marker for installation in the headblock	20.812.892.00
Tape scissors and tape marker for installation in the headblock	20.812.893.00

1.3.1 Connectors for Options and Remote Control Sockets**Order Number**

(Not required for connecting STUDER remote controls)	
Connector for serial remote control (options 20.812.885.00 + 20.812.886.00), 9-pin, D-type, connector with screw lock	20.020.303.07
Connector for noise reduction system (option 20.812.945.00), 15-pin, D-type connector with screw lock	20.020.303.08
Connector for synchronizer 25-pin, D-type with screw lock (KEY: positions 8+24)	20.020.303.15
Connector for parallel remote control, 25-pin, D-type connector with screw lock (KEY: position 24).	20.020.303.16
Connector for parallel channel remote control, 37-pin, D-type connector with screw lock	20.020.303.19

1.3.2 General Information

- All models are chassis versions for installation into A812 consoles or standard 19" rack cabinets. Consoles must be ordered separately (see accessories)
- Operating position: any position between horizontal and vertical
- SYNC reproduction as standard feature, except models without channel selector
- CCIR/NAB equalizations switch-selectable
- Time code channel not active at 3.75 ips
- Electronic tape counter with real time indication at all tape speeds, positive and negative time indication. ZERO LOCATOR and ADDRESS LOCATOR, WATCH/LAP display capability, numerous additional functions.
- Splicing rail near the headblock
- Standard input and output connector configuration: INPUT XLR FEMALE / OUTPUT XLR MALE
- Built-in speaker for monitoring the source/tape signal
- Three-pronged adapter included with machine. Additional reel adapters must be ordered separately (refer to: Tape reels)
- Required XLR audio connectors included with machine
- 25-Pin connector for parallel tape deck control as standard equipment. Matching connectors must be ordered separately (refer to: Connectors for options ...)
- Size of the STUDER standard modules:
H = 190 mm x W = 40.6 mm
- Line voltage: 100 V to 120 VAC OR 200 V to 240 VAC (selectable), $\pm 10\%$, 50 to 60 Hz.
- Operating and service instruction manual included with machine.

IMPORTANT The input and output configuration with or without transformers is as specified in the Section: Standard versions. Other configurations available on request.

1.4. Accessories

1.4.1 Studio Consoles

Order Number

(overall width 635 mm)

A812 consoles are supplied assembled with wooden side panels. The tilt mechanism can be locked in the following positions:

- horizontal
- 7.5° or 15° forward tilt
- 7.5° or 15° or 60° backward tilt.

(If reels with a diameter of 317.5 mm (12.5") are used, the reels do not protrude laterally from the console.)

Consoles with TRAVERSE

for machines with penthouse

- Height 780 mm, with gliding pads 20.020.204.20
- Height 840 mm, with gliding pads 20.020.204.21
- Height 900 mm, with gliding pads 20.020.204.22
- Height 840 mm, with casters 20.020.204.25
- Height 900 mm, with casters 20.020.204.26
- Height 960 mm, with casters 20.020.204.27

Consoles with RACK BASE (19", 3 U)

for machines with penthouse

- Height 780 mm, with gliding pads 20.020.204.30
- Height 840 mm, with gliding pads 20.020.204.31
- Height 900 mm, with gliding pads 20.020.204.32
- Height 840 mm, with casters 20.020.204.35
- Height 900 mm, with casters 20.020.204.36
- Height 960 mm, with casters 20.020.204.37

Consoles with TRAVERSE

for machines without penthouse

- Height 780 mm, with gliding pads 20.020.204.40
- Height 840 mm, with gliding pads 20.020.204.41
- Height 900 mm, with gliding pads 20.020.204.42
- Height 840 mm, with casters 20.020.204.45
- Height 900 mm, with casters 20.020.204.46
- Height 960 mm, with casters 20.020.204.47

Consoles with RACK BASE (19", 3 U)

for machines without penthouse

- Height 780 mm, with gliding pads 20.020.204.50
- Height 840 mm, with gliding pads 20.020.204.51
- Height 900 mm, with gliding pads 20.020.204.52
- Height 840 mm, with casters 20.020.204.55
- Height 900 mm, with casters 20.020.204.56
- Height 960 mm, with casters 20.020.204.57

**LOW-COST STUDIO
CONSOLES**

A812 consoles complete with wooden side panels and casters. Integrated tilting mechanism. Operating height 840 mm.

Console with TRAVERSE	for machines with console penthouse	20.020.204.65
Console with RACK BASE (19", 3 U)	for machines with console penthouse	20.020.204.75
Console with TRAVERSE	for machines without console penthouse	20.020.204.85
Console with RACK BASE (19", 3 U)	for machines without console penthouse	20.020.204.95

1.4.2 Console Accessories**Order Number**

Console panel with storage shelf	for 635 mm studio consoles, for installation of models: A812-1, A812-0.75, A812-2 F, A812-2	21.811.560.00
Console penthouse with storage shelf	and monitor speaker, for 635 mm studio consoles, for installation of models: A812-1, A812-0.75, A812-2F, A812-2	20.811.563.00
Housing for TLS4000	LOCAL CONTROL UNIT (only for models with penthouse with VU-meter or channel selector)	1.058.058.00
Blanking panels for 19" rack base:	■ 1 Unit high, colorless anodization	1.918.001.00
	■ 2 Units high, colorless anodization	1.918.002.00
	■ 3 Units high, colorless anodization	1.918.003.00
	■ 1 Unit high, grey lacquer	1.918.011.00
	■ 2 Units high, grey lacquer	1.918.012.00
	■ 3 Units high, grey lacquer	1.918.013.00
	Screws for rack mounting M6 x 12	21.99.0164
	Screws for rack mounting M6 x 16	21.99.0167
	Washers for rack mounting, M6	23.99.0121

1.4.3 Remote Controls

Order Number

Parallel tape deck remote control in desktop housing, with 15 m cable (spare space for VARISPEED control 21.328.253.00 available).	20.820.366.00
VARISPEED control for installation in desktop housing 20.820.366.00	21.328.253.00
25-Pin connector, type D, for installation in desktop housing of the parallel remote control 20.820.366.00 (for through-connection of the remote control signals).	21.328.254.00
Parallel tape deck control in STUDER STANDARD MODULE size, 1 unit wide, with 15 m connection cable.	20.820.367.00
VARISPEED control in STUDER STANDARD MODULE size, 1 unit wide, without connection cable.	21.328.290.00
Flat cable 0.3 m for connecting the VARISPEED control to the parallel tape deck remote control 20.820.367.00	1.023.102.03
Connection cable 15 m for direct connection of the VARISPEED control to the A812 tape recorder (25-pin D-type connector)	1.328.292.00
VARISPEED control, deluxe version, with digital indication of the speed deviation in semitones, STUDER STANDARD MODULE size, 1 unit wide (without connection cable)	1.328.280.00
Flat cable 0.3 m for connecting the VARISPEED control (deluxe version) to the parallel tape deck remote control 20.820.367.00	1.023.730.00
Connection cable 15 m for direct connection of the VARISPEED control (deluxe version) to the A812 tape recorder (9- and 25-pin D-type connector)	1.023.731.00
Serial remote tape timer with main and auxiliary timer indication (only available in conjunction with option 20.812.888.00), for stand-alone operation or for installation in mounting frame 1.328.270.31/32/33, with 15 m connection cable (H = 50.8 x W = 202.6 x D = 130 mm)	20.820.368.00
Mounting frame for installing one serial remote counter 20.820.368.00	1.328.270.31
Mounting frame for installing two serial remote counters 20.820.368.00	1.328.270.32
Mounting frame for installing three serial remote counters 20.820.368.00	1.328.270.33

Serial remote tape timer with 5-position display for connection to RS232 interface (only available in conjunction with option 20.812.885.00) for stand-alone operation or for installation in mounting frame 1.328.275.31/32/33, with 15 m connection cable (H = 50.8 x W = 157 x D = 130 mm)	21.328.275.00
Mounting frame for installing one serial remote counter 21.328.275.00	1.328.275.31
Mounting frame for installing two serial remote counters 21.328.275.00	1.328.275.32
Mounting frame for installing three serial remote counters 21.328.275.00	1.328.275.33
Serial remote control with main and auxiliary tape timer indication (only available in conjunction with option 20.812.888.00), desktop housing, with 15 m connection cable	20.820.369.00
Serial remote control with main and auxiliary tape timer indication (only available in conjunction with option 20.812.888.00), desktop housing, with 15 m connection cable	20.820.370.00
Parallel channel remote control for audio and code channels (only available in conjunction with option 20.812.938.00) STUDER STANDARD MODULE size, 1 unit wide, with 15 m connection cable	21.328.260.00

1.4.4 Reel Adapters**Order Number**

Professional NAB adapter with aluminum grip section	1.013.344.00
Low-cost NAB adapter for use with standard 3-pronged adapter	89.01.0354
DIN adapter	1.013.343.00
Reel flange for DIN adapter	1.013.328.00
Reel flange with integrated DIN adapter, for use with standard 3-pronged adapter	1.013.046.00
AEG hub 1/4", metal	10.200.003.01
Empty NAB reel, 1/4", (diam. 26 cm), metal	10.213.001.01

1.4.5 Supplementary Accessories**Order Number**

Plastic dust cover	for machines in 635 mm studio console with penthouse	1.058.100.30
Plastic dust cover	for machines in 635 mm console without penthouse	1.058.100.31

1.4.6 Conversion Kits**Order Number**

Rack base (19", 3 U)	for TLS 4000 synchronizer (1 U) and additional space for 2 x 19" modules (2 U). For swapping with the traverse; fits 635 mm studio and low-cost studio consoles.	1.058.057.00
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1.4.7 Service Aids**Order Number**

Service Aids	Tool case (basic kit) with soldering iron and demagnetizing choke for 110 V.	20.020.001.20
	Tool case (basic kit) with soldering iron and demagnetizing choke for 220 V.	20.020.001.21
	Supplementary tool kit A812 including extender boards.	20.020.001.39
	Extender board for audio and logic modules, 39-pin	1.820.799.00
	Extender board for logic modules, 64-pin	1.228.324.81
	Additional service aids can be found in the price "Accessories" price list.	

1.5 Technical Data

Tape speeds:

76,2 38,1 19,05 9,5 cm/s (30 ips - 15 ips - 7.5 ips - 3.75 ips)
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All tape speeds selectable on the front panel (depending on the programming of the keys either one, two, three or four of the available speeds can be selected).

Nominal tape speed	adjustable within in steps of	±0.2% 0.025%.
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Variable tape speed	Nominal speed variable by (with indication programmable in %, semitones or ips).	±7 semitones (+54 to -35%)
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Tape speed deviation	Max.	±0.2%
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Tape slip	Max.	0.1%
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Tape reels	NAB, 3-pronged, DIN Max. diameter Min. hub diameter	318 mm (12.5") 45 mm (1.77")
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Tape width		6.3 mm (1/4")
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Wow and flutter	Peak value weighted, according to DIN 45507 or IEC publ. 386.	
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Ambient air temperature	0 to 40°C
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76 cm/s, 30 ips	max.	0,03%
38 cm/s, 15 ips	max.	0,04%
19 cm/s, 7,5 ips	max.	0,06%
9,5 cm/s, 3,75 ips	max.	0,1 %

Starting time	At 30 ips tape speed, 1000 m tape with DIN hub or 762 m (2500 ft) tape with NAB reel (for reaching 200% of the nominal wow-and-flutter rating):	approx. 0.4 s
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Tape counter: 6-Position LED indication in hours, minutes, seconds and 10th of seconds at all tape speeds. In reverse direction incrementing past zero with negative sign.

Range:	-9 h 59 min 59.9 s to 23 h 59 min 59.9 s
--------	--

Spooling speed: Programmable 0.1 to 12 m/s (4 to 470 ips)

Winding time: For 1000 m tape approx. 90 s
For 762 m (2500 ft) tape approx. 70 s

Braking time from full winding speed: With full 1000 m pancake (1/4" tape) approx. 4 s

Tape tension

- Play and record mode: nominal 0.7 N (70 p)
- Spooling mode: nominal 0.8 N (80 p)

Line inputs:

- Balanced and floating, with input transformers.
Impedance, 30 Hz to 20 kHz $\geq 10 \text{ k}\Omega$

or

- Electronically balanced, without input transformer.
Impedance, 30 Hz to 20 kHz $\geq 20 \text{ k}\Omega$
(balanced wiring)
Impedance, 30 Hz to 20 kHz $\geq 10 \text{ k}\Omega$
(unbalanced wiring)

Input level:

- Nominal input level relative to reference flux, internally programmable: +6, +10, +14, +16 dBm;
- Nominal input level relative to operation level (according to NAB), internally programmable: 0, +4, +8, +10 dBm;
- (Adjustment range of the magnetic flux with above input levels: 100 to 1000 nWb/m)
- Uncalibrated mode, models with VU meter panel and input/output level potentiometers.

Max. adjustable increase in the input sensitivity:

Maximum input level:

- With input transformer: +24 dBm
- Without input transformer: +28 dBm
(+26 dBm if the nominal input level, relative to operating level, is set to 0/6 dBm)

Outputs:

- With transformer balanced and floating
Impedance 30 Hz...20 kHz: $\leq 50 \Omega$
Load $\geq 200 \Omega$

or

- Without transformer electronically balanced
Impedance, 30 Hz...20 kHz $\leq 30 \Omega$
Load $\geq 200 \Omega$

Output level:

- Nominal output level relative to reference flux, internally programmable: +6, +10, +14, +16 dBm;
- Nominal output level relative to operating level (according to NAB), internally programmable: 0, +4, +8, +10 dBm

(Adjustment range of the reproduce gain for operating fluxes of 100 to 1000 nWb/m)

Uncalibrated mode, models with VU-meter panel and input/output level potentiometers.

Max. adjustable increase in the output gain: 10 dB

Max. output level:

- With output transformer: +24 dBu
(Load $\geq 200 \Omega$)
- Without output transformer: +28 dBu
(Load $\geq 200 \Omega$)

- Balanced load	$\geq 200 \Omega$:	+26 dBu
- Unbalanced load	$\geq 200 \Omega$:	+24 dBu
- Balanced load	$\geq 600 \Omega$:	+30 dBu

(+26 dBu if the nominal output level, relative to operating level, is set to 0/6 dBm)

Unbalance load $\geq 600 \Omega$: +24 dBu

Equalization standards:

Switch selectable NAB and CCIR

Equalization time constants:

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5 cm/s 3.75 ips
CCIR	17,5/ ∞ μ s	35/ ∞ μ s	70/ ∞ μ s	90/3180 μ s
NAB	17,5/ ∞ μ s	50/3180 μ s	50/3180 μ s	90/3180 μ s

Frequency response,
record/reproduce:

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5 cm/s 3.75 ips
± 2 dB	40 Hz ... 22 kHz	30 Hz ... 20 kHz	30 Hz ... 16 kHz	30 Hz ... 10 kHz
± 1 dB	60 Hz ... 20 kHz	40 Hz ... 18 kHz	30 Hz ... 12 kHz	30 Hz ... 8 kHz

Frequency response
SYNC reproduction:

Amplifier programming, "narrow band":

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5 cm/s 3.75 ips
± 2 dB	60 Hz ... 12 kHz	30 Hz ... 12 kHz	30 Hz ... 8 kHz	----- -----

Amplifier programming, "wideband":

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5 cm/s 3.75 ips
± 2 dB	60 Hz ... 20 kHz	30 Hz ... 18 kHz	30 Hz ... 12 kHz	----- -----

Signal-to-noise ratio

Record/reproduce:

CCIR (Equalization according to CCIR, or AES at 76 cm/s (30 ips), measured with tape type AGFA PER 528, BASF LGR 50 or equivalent).

Full-track, 6.3 mm track width, (320 nWb/m; 9,5 cm/s = 250 nWb/m)

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5cm/s 3.75ips
Linear according to CCIR 468-2	64 dB	62 dB	61 dB	57 dB
Weighted according to CCIR 468-2	54 dB	52 dB	51 dB	48 dB
Weighted, ASA-A (IEC 179)	68 dB	66 dB	64 dB	62 dB

Stereo, 2,75 mm track width (510 nWb/m; 9,5 cm/s = 400 nWb/m),

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5cm/s 3.75ips
Linear according to CCIR 468-2	65 dB	63 dB	62 dB	58 dB
Weighted according to CCIR 468-2	56 dB	54 dB	52 dB	49 dB
Weighted, ASA-A (IEC 179)	69 dB	67 dB	65 dB	63 dB

2-Track, 2,0 mm track width (510 nWb/m; 9,5 cm/s = 400 nWb/m)

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5cm/s 3.75ips
Linear according to CCIR 468-2	64 dB	62 dB	61 dB	57 dB
Weighted according to CCIR 468-2	54 dB	52 dB	51 dB	48 dB
Weighted, ASA-A (IEC 179)	68 dB	66 dB	64 dB	61 dB

NAB [Equalization according to NAB or AES at 30 ips, measured with tape type SCOTCH 3M 226 or equivalent]

Full-track, 6,3 mm track width (1040 nWb/m; 3.75 ips = 510 nWb/m)

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75ips 9,5cm/s
linear, RMS, 30 Hz ...20 kHz	75 dB	72 dB	74 dB	64 dB
RMS value,, ASA-A-weighted, according to DIN 45633/ IEC Publ. 179	78 dB	75 dB	77 dB	68 dB

Stereo, 2,75 mm track width (1040 nWb/m; 9,5 cm/s = 510 nWb/m)

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75ips 9,5cm/s
linear, RMS, 30 Hz ...20 kHz	71 dB	68 dB	70 dB	59 dB
RMS value, ASA-A-weighted, according to DIN 45633/ IEC Publ. 179	75 dB	71 dB	73 dB	63 dB

2-Track, 2,0 mm track width (1040 nWb/m; 9,5 cm/s = 510 nWb/m)

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75ips 9,5cm/s
linear, RMS, 30 Hz ...20 kHz	70 dB	67 dB	69 dB	59 dB
RMS value, ASA-A-weighted, according to DIN 45633/ IEC Publ. 179	74 dB	70 dB	72 dB	63 dB

Signal-to-noise ratio

Record/SYNC reproduction:

Amplifier programming "narrow band":

CCIR [Equalization according to CCIR or AES at 76cm/s (30 ips), measured with tape AGFA PER 528, BASF LGR 50 or equivalent]

Full-track, 6,3 mm track width (320 nWb/m)

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7,5 ips	9,5cm/s 3,75ips
Linear according to CCIR 468-2	63 dB	62 dB	61 dB	-----
Weighted according to CCIR 468-2	54 dB	52 dB	51 dB	-----

Stereo, 2,75 mm track width(510 nWb/m)

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5cm/s 3.75ips
Linear according to CCIR 468-2	62 dB	61 dB	60 dB	-----
Weighted according to CCIR 468-2	55 dB	53 dB	52 dB	-----

2-Track, 2,0 mm track width (510 nWb/m)

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5cm/s 3.75ips
Linear according to CCIR 468-2	61 dB	60 dB	59 dB	-----
Weighted according to CCIR 468-2	54 dB	52 dB	51 dB	-----

Harmonic distortion:

(Record-reproduce 1 kHz, measured with tape type AGFA PER 528)

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9,5cm/s 3.75ips
CCIR, full-track 320 nWb/m	≤ 1,0 %	≤ 1,0 %	≤ 1,5 %	≤ 2,0 %
CCIR, stereo and 2-track 510nWb/m	≤ 1,0 %	≤ 1,0 %	≤ 1,5 %	≤ 2,0 %

Harmonic distortion:

(Record reproduce, 1kHz, measured with tape type SCOTCH 3M 226)

	30ips 76 cm/s	15ips 38 cm/s	7.5ips 19 cm/s	3.75ips 9,5cm/s
	510 nWb/m	510 nWb/m	510 nWb/m	400 nWb/m
NAB, full-track	≤ 0,5%	≤0,5%	≤0,5%	≤0,5%
NAB, stereo/2-track	≤0,5%	≤0,5%	≤0,5%	≤0,5%

Cross talk

(at 1 kHz, according 45521) 2-Track models:

≥65 dB

Erase depth:

at 1 kHz and 510 nWb/m

38 cm/s 15 ips

With full-track erase head:

≥80 dB

With overlapping 2-track erase head:

≥75 dB

Erase and bias frequency:

At all tape speeds:

153.6 kHz

VU-meters:

Characteristic switchable from VU (according to IEC recommendation 268, part 10, section 4) to PPM (peak program meter) (according to IEC recommendation 268, part 10, section 3, except 24.1 concerning scale division)

Power input:

(switch selectable)

100 V to 140 V or 200 V to 240 V; ±10%; 50 or 60 Hz

Power consumption

(at nominal voltage):

Idle:	90 W
Recording, 2-channel:	150n W
Spooling:	190 W
Max. power consumption:	280 W

Admissible power outage:

Operating state unaffected by power outages of

up to 100 ms

Ambient air temperature:

(+32°F to +104°F)

0°C to +40°C

Relative humidity:

Noncondensing:

20% to 90%

Safety standard:

According to IEC recommendation, publication 65, protection category I (power filter, power switch, power fuse, power transformer and voltage selector conform to protection categories I and II)

Weight:

(without console), depending on configuration:

Net.

approx. 43 kg

Gross (air freight)

approx. 70 kg

1.5.1 Technical Data of the Timecode Channel

The time code channel corresponds to the IEC publication 461, DIN 45511, part 7.

Track width/track location: In center of tape 0.38 mm

Code format: 80-Bit address code SMPTE/EBU
(switch selectable 24/25/29.97/30 frames/second)

Tape speeds:

76,2 38,1 19,05 9,5 cm/s (30 ips - 15 ips - 7.5 ips - 3.75 ips)
--

Magnetic flux of the time code track: 729 nWb/mpp ± 3 dB

Time code channel input: With transformer balanced and floating
Input impedance ≥ 10 k Ω

Input level:

Nominal:	2 Vpp
Minimum:	0.25 Vpp
Maximum:	4 Vpp

Time code channel output: With transformer balanced and floating
Output impedance ≤ 40 Ω

Output level: Load ≥ 200 Ω 2 Vpp

Crosstalk from code channel to audio channel: Relative to 510 nWb/m tape flux of the audio track, for all components of the time code signal ≥ 90 dB

Time code delay unit: (TIME CODE DELAY UNIT)
Selectable time code delay for:

- Coincident time code and audio track recording or reproduction at 24/25/29.97/30 frames/sec
- Telefunken M15A-TC compatible time code and audio track recording or reproduction at 24/25/29.97/30 frames/sec.

Coincidence error between code track and audio track:
[With TIME CODE DELAY UNIT in coincident mode]

at 38,1 cm/s (15 ips) ± 4 ms

The technical data apply to any operating position between horizontal and vertical.

We reserve the right to make changes as technical progress may warrant.

1.5.2 Type of Packing

Machines with VU-meter panel:
Cardboard box
(depending on console height).

82 x 84 x 120/126/132 cm

Machines without VU-meter panel:
Cardboard box
(depending on console height)

82 x 84 x 93/99/105 cm

Gross weight:
Depending on configuration:

73 kg to 119 kg

1.5.3 Dimensions

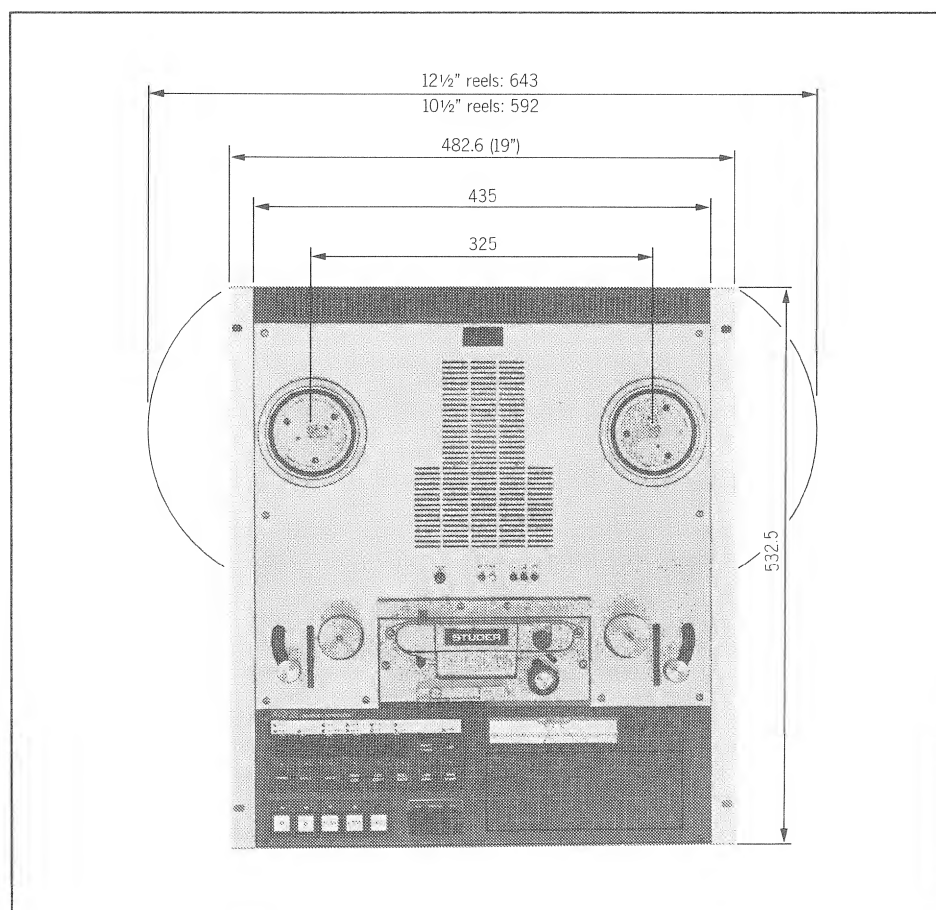


Fig. 1.5.1 max. depth 402 mm

1.6 Instructions for the Service Personnel

1.6.1 Abbreviations

A	Assembly
ANT	Antenna
B	Bulb
BA	Battery, rechargeable battery
BR	Optocoupler (bulb --> LDR)
C	Capacitor
D	Diode, DIAC
DL	LED
DLQ	Optocoupler (LED --> phototransistor)
DLR	Optocoupler (LED --> LDR)
DLZ	LED array, 7-segment display
DP	Photodiode
DZ	Rectifier
E	Electronic component
EF	Headphones
F	Fuse
FL	Filter
H	Head (audio, erase)
HC	Hybrid circuit (thick/thin film)
HE	Hall element
IC	Integrated circuit
J	Socket (female)
J	Jumper
K	Relay, contactor
L	Inductor
LS	Loudspeaker
M	Motor
ME	Meter
MIC	Microphone
MP	Mechanical part
P	Connector (male)
PU	Phono cartridge
Q	Transistor, FET, Thyristor, TRIAC
QP	Phototransistor
QPZ	Phototransistor array
R	Resistor
RP	Light-sensitive resistor, LDR
RT	Temperature-dependent resistor
RZ	Resistor network
S	Switch
T	Transformer
TL	Delay line
TP	Test point, test socket
W	Wire, stranded wire
X	Base, holder
XB	Lamp base
XF	Fuse holder
XIC	IC socket
Y	Crystal, piezo element
Z	Network, array

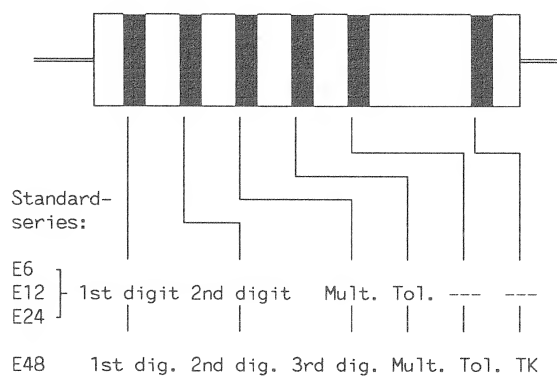
1.6.2 Powers of Ten

Designation	Abbreviation	Value
Tera-	T	10 ¹²
Giga-	G	10 ⁹
Mega-	M	10 ⁶
Kilo-	k	10 ³
Milli-	m	10 ⁻³
Mikro-	μ	10 ⁻⁶
Nano-	n (mμ)	10 ⁻⁹
Pico-	p (μμ)	10 ⁻¹²
Femto-	f	10 ⁻¹⁵

() = Abbreviation commonly used in the USA

1.6.3 Letter and Color Codes

Resistors



Color	Digit	Multiplier	Tolerance	TK
gold	-	0,01	5 %	-
silver	-	0,1	10 %	-
black	0	1	-	-
braun	1	10	1 %	100·10 ⁻⁶ /K
red	2	100	2 %	50·10 ⁻⁶ /K
orange	3	1 k	-	15·10 ⁻⁶ /K
yellow	4	10 k	-	25·10 ⁻⁶ /K
green	5	100 k	0,5 %	-
blue	6	1 M	0,25 %	-
violet	7	10 M	0,1 %	-
grey	8	-	-	-
white	9	-	-	-

No TK designation = 50 · 10⁻⁶/K

Only 1 black ring = 0 Ω (jumper)

Capacitors:

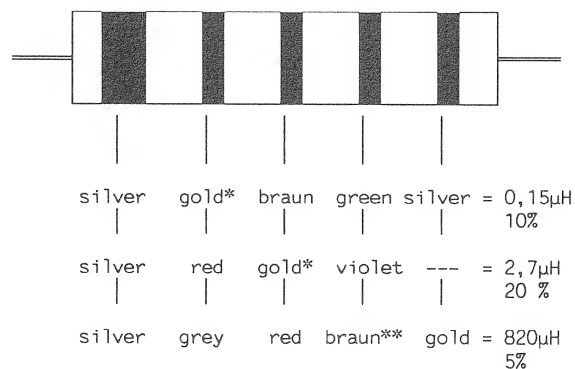
Frequently, the tolerance is specified by a letter behind the printed capacitance rating:

D	= 0,5	%
F	= 1	%
G	= 2	%
J	= 5	%
K	= 10	%
M	= 20	%

Molded RF coils:

A wide silver ring and four narrow rings of different colors are used to identify molded RF coils. The wide silver ring marks the start of the counting direction. The second, third, and fourth ring specify the inductance in Microhenry (μH). The second and the third ring designate the numeric value and the fourth ring is either a multiplier, or if its color is gold, the decimal point. The fifth ring designates the tolerance in percent (\pm).

Color	Digit	Multiplier	Tolerance
gold	-	-	5 %
silver	-	-	10 %
black	0	1	-
braun	1	10	1 %
red	2	100	2 %
orange	3	103	-
yellow	4	104	-
green	5	105	0,5 %
blue	6	106	-
violet	7	107	-
grey	8	108	-
white	9	109	-
without	-	-	20 %

Examples:

* Decimal point
** Multiplier

Inductors and transformers on ferrite cores:

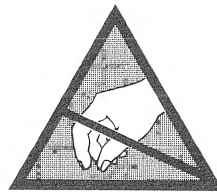
Inductors and transformers on ferrite cores are marked with three colored dots (color coding same as in the two left-hand columns of the Section "Resistors"). These dots designate the last three digits of the STUDER standard number. The large dot marks the start. The first digits of the standard number (1.022.--- are always the same.

Example:

- Driver transformer, 150 kHz.
- Standard number: 1.022.211
- Color code: red (large dot), brown, brown

Terminal 1 of the winding form is usually identified with a lobe; if not, the winding form is marked with a yellow dot near terminal 1.

1.6.4 Electrostatically Sensitive Components



MOS (metal oxide semiconductor) devices are highly sensitive to electrostatic charges. The following precautions should be followed:

- Electrostatically sensitive components and assemblies ("ESE" are stored and transported in protective packing material. The label illustrated above is affixed to this protective packing.
- It is important to avoid any contact of the terminals with plastic bags, plastic foils and other statically chargeable material.
- Only touch the terminals when your wrist is connected to ground.
- Use a special conductive plastic mat as a work surface.
- Never install or unplug printed circuit boards when the tape recorder is under power! The tape recorder should be switched off for at least 5 seconds before any circuit boards are installed or removed!

2. Start up, Procedure, Operating

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2.1 Unpacking and Checking

The A812 tape recorder is shipped in a special packing that protects the machine from damage in transit. Care should be exercised when unpacking the machine so that its surfaces do not become marred.

Check that you have received all the material by comparing the packing content with the shipping list. Save the original packing material because it provides the best protection in case your tape recorder needs to be transported again.

Check all items for possible shipping damage. If you discover any damage, immediately notify the forwarding agent as well as the nearest STUDER dealer.

2.2 Installation Site

The A812 should be installed in a dust-free and an adequately ventilated environment. The performance data of the tape recorder are guaranteed for an ambient temperature range of 0°C to +40°C with a relative humidity of 20% to 90% (noncondensing).

Install the tape recorder in such a way that sufficient space is available all around the machine for unobstructed cooling. Particularly in recessed locations there is a possibility of heat accumulation. The air circulation zone should neither be misused as a storage area nor be obstructed with manuals etc.

The tape recorder should not be installed in the vicinity of strong electromagnetic fields. General sources of interference are: strong load fluctuations on adjacent power circuits, high-power transformers, elevator motors, electrical welding plants, as well as nearby radio and television transmitters.

The rear of the unit should remain readily accessible for service work. When the recorder is installed in a niche, sufficient space should be available for shifting the machine even when the cables are attached.

2.3 Setting up the Tape Recorder

The technical data are guaranteed for operating the tape recorder in any position between horizontal and $\pm 15\%$ inclination.

2.3.1 Assembling the Console

The console is shipped in disassembled condition.

- First fasten the side panels of the console to the traverse (or the rack base) by means of a 5 mm hexagon-socket-screw key. Subsequently fasten the wooden side panels with 4 screws each (4 mm hexagon socket).
- The rear console panel is mounted after the tape recorder has been installed.
- In order to install the tape recorder it is necessary to remove the two long aluminum strips (3 screws each, hexagon-socket 2.5 mm, as well as 2 screws M6, screwdriver No. 6).
- Position the console horizontally (the lever for releasing the tilting mechanism is located on the left front below the console). Slide the tape recorder into the console from the back, mount the aluminum strips and fasten the screws.

**Tape recorders without
VU-meter penthouse:**

- Install the rear panel (6 hexagon socket 2.5 mm)

**Tape recorders with
VU-meter penthouse:**

- Slide the cable harness and the flat cable through the panel neck (on the rear panel), connect the panel housing to the panel neck (2 screws, hexagon socket 5 mm).
- Engage the rear panel with mounted penthouse on the back of the console and fasten the screws (6 x hexagon socket 2.5 mm).

Important !!

**DO NOT ACTUATE THE TILTING MECHANISM IN TAPE SPOOLING MODE
BECAUSE THE HIGH CENTRIFUGAL FORCES COULD DAMAGE THE TAPE,
THE REELS, THE ADAPTER AND THE TAPE DECK COVER !!**

2.4 Connectors, Fuses

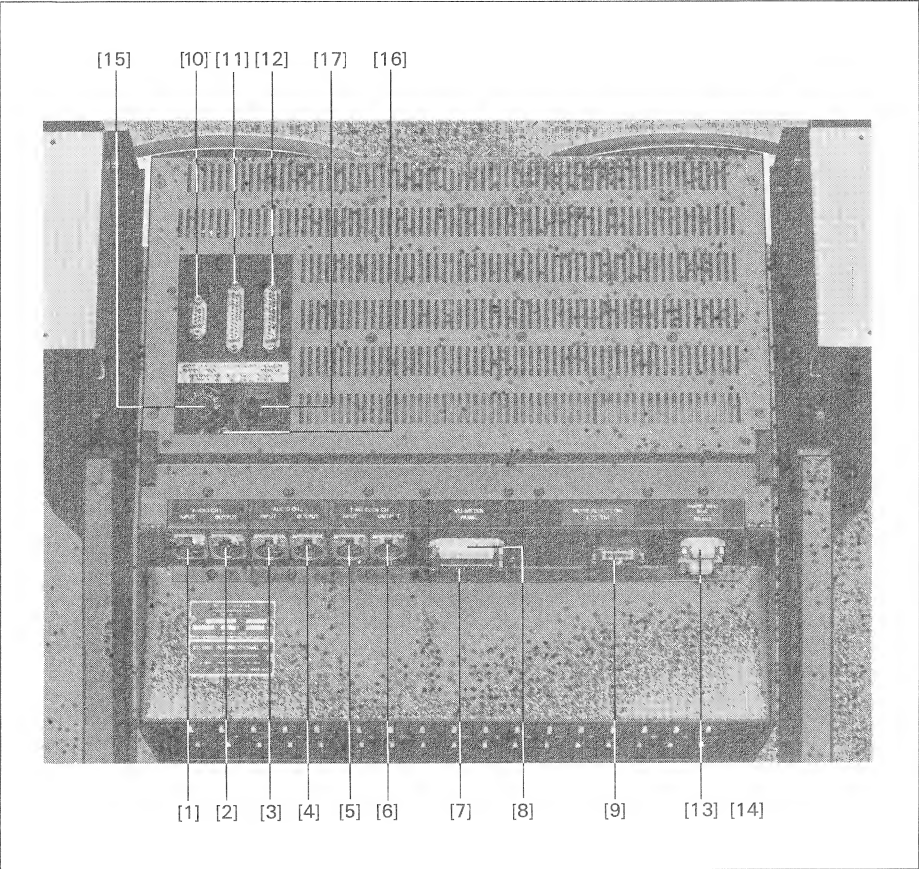


Fig. 2.4.1

- [1] Line input CH1
- [2] Line output CH1
- [3] Line input CH2
- [4] Line output CH2
- [5] Line input time code channel (TC versions only)
- [6] Line output time code channel (TC versions only)

- [7] Connector for VU-meter panel (audio)
- [8] Connector for VU-meter panel (control)
- [9] Connector for noise reduction system (option) *
- [10] Connector for serial remote control, remote counter, and autolocator (option) *
- [11] Connector for synchronizer (TC versions only) *
- [12] Connector for parallel remote control *
- [13], [14] Parallel wired connectors for SMPTE/EBU bus, RS232 interface, or data dump to external memory (option)
- [15] Line voltage selector *
- [16] Ground socket *
- [17] Power inlet with primary fuse, diam. 5 x 20 mm

100 to 140 V: 6.3 A SLOW
200 to 240 V: 3.15 A SLOW

The connectors identified with * are located below the hinged cover.

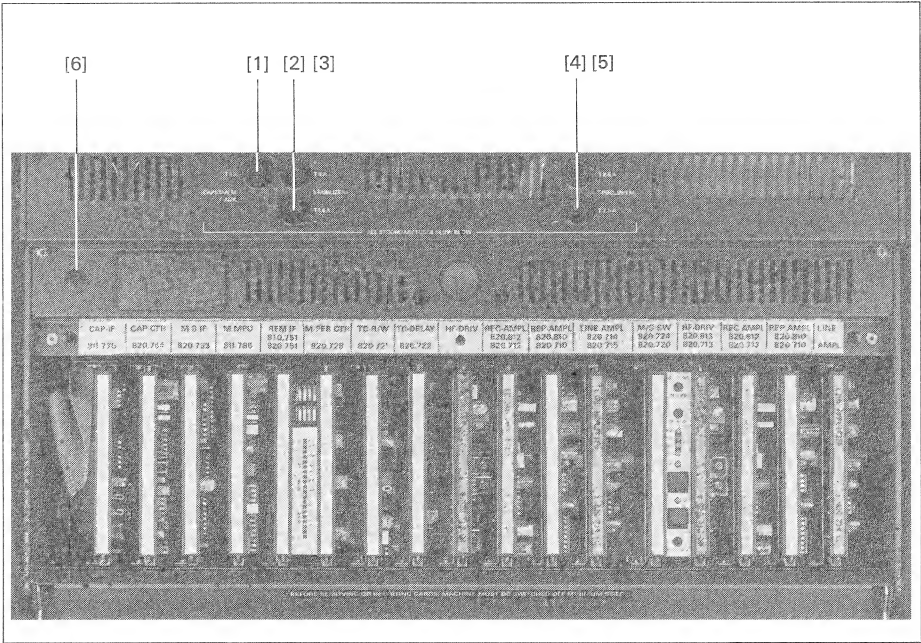


Fig. 2.4.2

All secondary fuses: diam. 5 x 20 mm !

- [1] Fuse for capstan motor and auxiliary voltages 4 A SLOW
- [2] Fuse for STABILIZER 8 A SLOW
- [3] Fuse for STABILIZER 1.6 A SLOW
- [4] Fuse for positive spooling motor voltage (+) 2.5 A SLOW
- [5] Fuse for negative spooling motor voltage (-) 2.5 A SLOW
- [6] Headphones socket (on models with monitor speaker built into the tape deck cover)

2.4.1 Power Connection, Voltage Selection

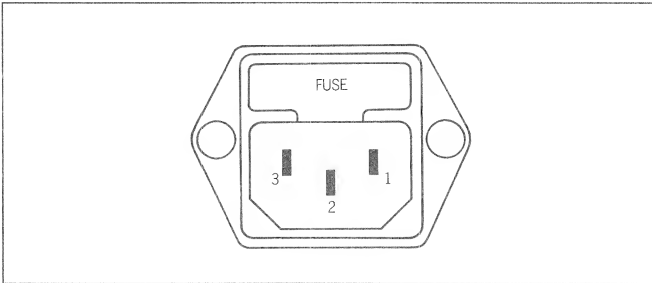


Fig. 2.4.3

No. 1 =	Phase
No. 2 =	Ground
No. 3 =	Neutral

Important !! Before you connect the recorder to the AC power source for the first time, check that the setting of the line voltage selector agrees with the local line voltage. The following voltage can be set:

100, 120, 140, 200, 220, 240 VAC, $\pm 10\%$; 50 to 60 Hz. Disconnect the recorder from the AC outlet before you change the line voltage!

After the line voltage selector has been adjusted, the power fuse in the power inlet may possibly have to be replaced with a correctly rated fuse (diam. 5 x 20 mm)

100 V ... 140 VAC: 6.3 A (SLOW)
200 V ... 240 VAC: 3.15 A (SLOW)

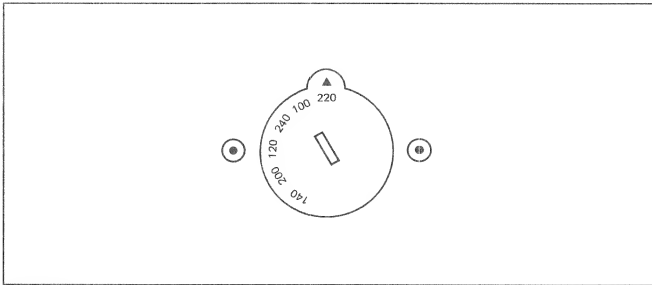


Fig. 2.4.4

2.4.2 Line Inputs and Outputs

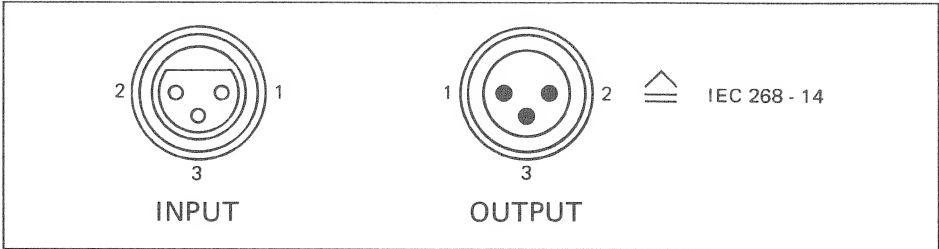


Fig. 2.4.5

The balanced inputs and outputs are terminated on XLR sockets or connectors (pin assignment according to IEC recommendation 268-14).

No. 1	Audio ground
No. 2	A-line (hot) *
No. 3	B-line (cold)

* Line A is "hot" with unbalanced connection of the tape recorder.

2.4.3 Remote Control Socket

Parallel remote control connector

A parallel remote control with the following capabilities can be connected to this 25-pin connector (female, type D):

- Remote control of the tape transport functions with feedback (<, >, PLAY, STOP, REC).
- RESET TIMER (resets the tape timer)
- ZERO LOC (automatically searches the tape timer address 00.00.00.0).
- LOC START (automatically searches the tape address at which the last PLAY command was entered).
- LIFTER (defeats the tape lifter in spooling mode).
- FADER (enables the fader start circuit).
- VARISPEED (variable tape speed).

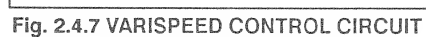
Connector set	Part No. 20.020.303.16
Connector housing, 25-pin	Part No. 54.13.7022
Connector, 25-pin, coded	Part No. 10.217.001.06

Pin assignment of the PARALLEL REMOTE CONTROL:

Pin	Signal name		Designation
01	+0.0		Ground (GND, 0 V)
02	BR-REW	*	Status indicator lamp REWIND
03	BR-FORW	*	Status indicator lamp FORWARD
04	BR-VRSPD	*	Status indicator lamp VARISPEED (alternatingly LOW and HIGH, when active)
05	SR-VRSPD	+	Switch for VARISPEED command
06	SR-FADRY	+	Switch for FADER START READY command
07	BR-LOCST	*	Status indicator lamp LOC START
08	BR-FADRY	*	Status indicator lamp FADER START READY
09	BR-REC	*	Status indicator lamp RECORD
10	ST-RESET	+	Switch for RESET TIMER command
11	FAD1		Input FADER START command, line A
12	FAD2		Input FADER START command, line B (FADER START is active when 5 to 24 VDC or AC are available across pins 11 and 12).
13	IR-REFEX		Input for external capstan PLL reference (nominal: 9.6 kHz, TTL level recommended; max. input voltage +10 V).
14	SR-OLOC	+	Switch for ZERO LOC command
15	BR-PLAY	*	Status indicator lamp PLAY
16	BR-STOP	*	Status indicator lamp STOP
17	SR-LIFT	+	Switch for LIFTER command
18	SR-LOCST	+	Switch for LOC START command
19	SR-REC	+	Switch for RECORD command
20	SR-REW	+	Switch for REWIND command
21	SR-FORW	+	Switch for FORWARD command
22	SR-PLAY	+	Switch for PLAY command
23	SR-STOP	+	Switch for STOP command
24	KEY		Connector coding
25	+24.0		+24 V supply (max. 300 mA)

* Open collector output, active LOW. No internal pull-up resistor. Maximum HIGH level +30 V, maximum current 200 mA (built-in current limiting resistor 22 Ω).

+ Switch input. LOW level activates the command. Internal pull-up resistor, 4.7 k Ω to +24 V. Maximum HIGH level = +30 V. Logical levels: LOW = 0 V to +4 V; HIGH = +7.5 V to +30 V.



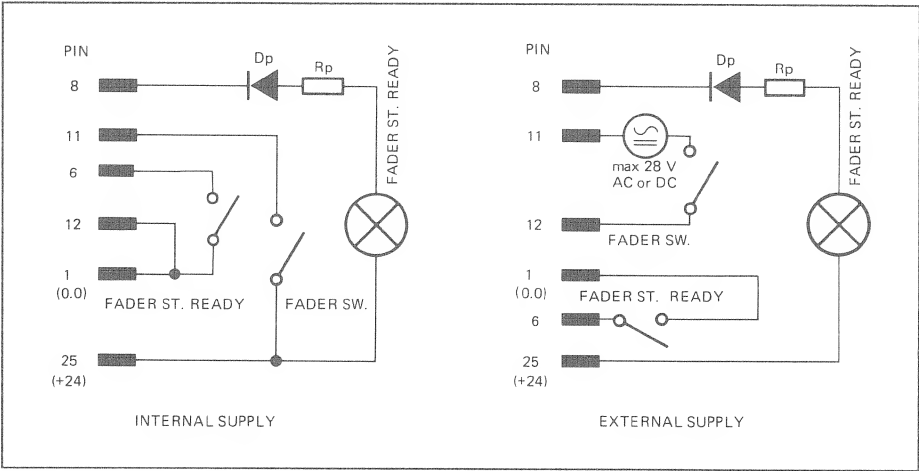


Fig. 2.4.8 FADER START CIRCUIT

Important !! If incandescent bulbs are used for feedback, their inrush current may not exceed 0.3 A !

Connector for external synchronizer

A 25-pin connector (female, type D) is available for connecting an external synchronizer (time code versions only).

Connector set	Part No. 20.020.303.15
Connector housing, 25-pin	Part No. 54.13.7022
Connector 25-pin, coded	Part No. 10.217.001.05

Pin assignment of the SYNCHRONIZER connector:

Pin	Signal name	Designation
01	+ 0.0	Ground (GND, 0 V)
02	BR-REW	* Status indicator lamp REWIND
03	BR-FORW	* Status indicator lamp FORWARD
04	BR-VRSPD	* Status indicator lamp VARISPEED (alternatingly LOW and HIGH when active)
05	SR-VRSPD	+ Switch for VARISPEED command
06	SR-REHSL	+ Switch for REHEARSAL command
07	OR-MVCLK	* Output for TAPE MOVE CLOCK signal (128 pulses/15 ips, pulse duty factor 50%).
08	KEY	* Connector coding
09	BR-REC	* Status indicator lamp RECORD
10	OR-MVDIR	* Output for TAPE MOVE DIRECTION signal (REWIND = LOW, FORWARD = HIGH).
11	OR-CMCLK	* Output for CAPSTAN MOTOR MOVE CLOCK signal (1200 pulses/s at 7.5 ips)
12	OR-SYENB	* Output for SYNCHRONIZER ENABLE signal (LOW when tape is tensioned and the recorder is operational, HIGH when the tape is not tensioned).
13	IR-REFEX	Input for external capstan PLL reference (nominal: 9.6 kHz, TTL level recommended; max. input voltage +30 V).
14	+ 0.0	Ground
15	BR-PLAY	* Status indicator lamp PLAY
16	BR-STOP	* Status indicator lamp STOP
17	SR-LIFT	+ Switch for LIFTER command
18	SR-MUTE	+ Switch for MUTE command (no influence on time code channel)
19	SR-REC	+ Switch for RECORD command
20	SR-REW	+ Switch for REWIND command
21	SR-FORW	+ Switch for FORWARD command
22	SR-PLAY	+ Switch for PLAY command
23	SR-STOP	+ Switch for STOP command
24	KEY	Connector coding
25	+24.0	+24V supply (max. 300 mA)

* Open collector output, active LOW. No internal pull-up resistor. Maximum HIGH level +30 V, maximum current 200 mA (built-in current limiting resistor 22 Ω).

+ Switch input. LOW level activates the command. Internal pull-up resistor, 4.7 k Ω to +24 V. Maximum HIGH level = +30 V. Logical levels: LOW = 0 V to +4 V; HIGH = +7.5 V to +30 V.

Connector for the RS232 serial interface

and SMPTE/EBU bus or RS232 interface and data backup facility

A terminal with RS232 interface and ASCII protocol or a tape recorder for data backup (option 1.810.751.00) or a terminal with RS 232 interface and binary protocol or the SMPTE/EBU bus (RS422) (option 1.820.751.20) can be interfaced to this connector.

Connector set	Part No.20.020.303.07
---------------	-----------------------

Pin assignment of the RS232 or SMPTE/EBU bus (RS422) connector (option 1.820.751.20);

RS232	
Pin	Signal name
01	SHIELD
02	---
03	RX
04	0,0V
05	---
06	0,0V
07	TX
08	---
09	SHIELD

RS422	
Pin	Signal name
01	SHIELD
02	TRANSMIT A
03	RECEIVED
04	REC.COMMON
05	---
06	TRSM.T.COM.0
07	TRANSMIT B
08	RECEIVE A
09	SHIELD

Pin assignment of the RS232 connector or the connector for data backup (option 1.810.751.00):

Pin	Signal name
01	FRMGND
02	TRANSA
03	RECEIVB
04	RECEIVCM
05	SPARE
06	TRANSCM
07	TRANSB
08	RECEIVA
09	FRAMGND

Connection of the AUTOLOCATOR/REMOTE TIMER

A serial remote control, a remote timer or an autolocator can be connected via this 9-pin connector (female, D-type). The keys of the serial remote control are freely programmable. All functions programmable on the local keyboard can also be executed from the remote control. The functions programmed on the serial remote control do not necessarily have to be the same as those on the local keyboard.

Pin assignment of the AUTOLOCATOR/REMOTE TIMER connector

Pin	Signal name
01	SHIELD
02	N.C.
03	TR-A
04	KEY
05	+0.0
06	N.C.
07	TR-B
08	SIGN.GND
09	+REMSUP

Connection of the NOISE REDUCTION SYSTEM

A 2-channel noise reduction system (either DOLBY <R> or TELCOM <R>) can be remote controlled via this 15-pin connector.

Connector set	Part No.20.020.303.08
---------------	-----------------------

Pin assignment of the NOISE REDUCTION SYSTEM connector

Pin	Signal name		Designation
01	B-BDY-01	*	Control signal for DOLBY system channel 1
02	B-BDY-02	*	Control signal for DOLBY system channel 2
03	N.C.		
04	KEY		
05	N.C.		
06	N.C.		
07	N.C.		
08	N.C.		
09	N.C.		
10	N.C.		
11	B-TLC-01	+	Control signal for TELCOM system channel 1
12			
13	B-TLC-02	+	Control signal for TELCOM system channel 2
14	+24.0		
15	+0.0		

* Open collector output, active LOW. No internal pull-up resistor. Max. HIGH level 30 V, max. current 200 mA.

+ Open collector output, same as above, but active HIGH.

2.4.4 Headphones Socket

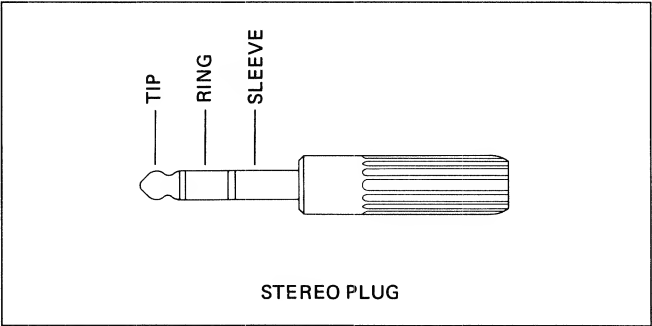
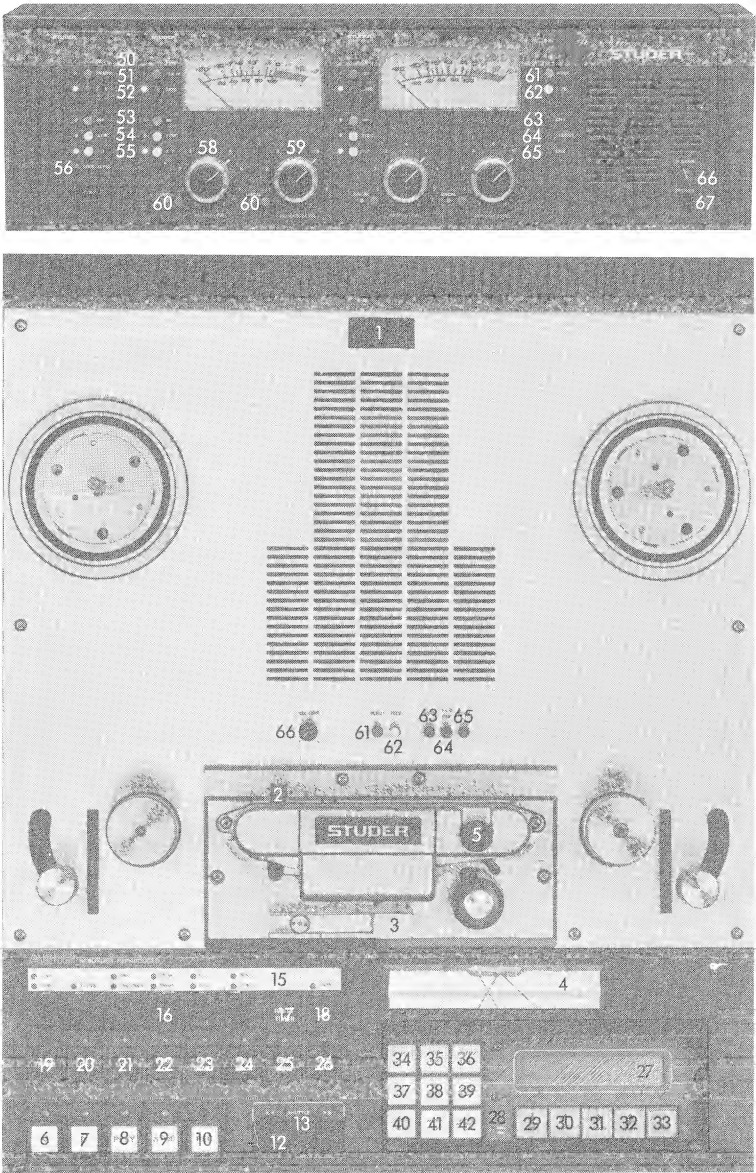


Fig. 2.4.9.

TIP	=	Left-hand channel
RING	=	Right-hand channel
SLEEVE	=	Ground

2.5 Operating Instructions



Three standard versions exist with differently programmed (and labelled) keypads. These versions are subsequently identified with the letters A to C.

Models: A812-0.75, A812-2, A812-1 A812-2F

Version A

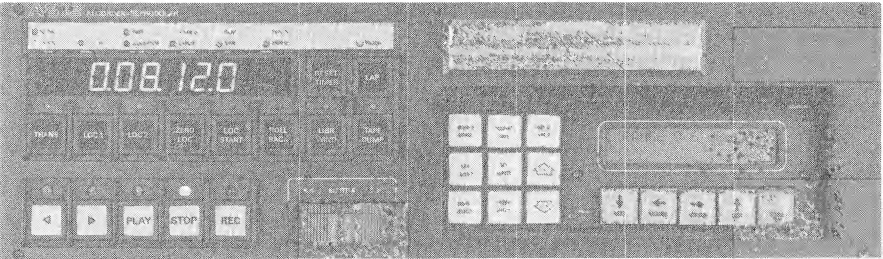


Fig. 2.5.2

Models: A812-VU, A812-2/2 VU, A812-2 VU, A812-1 VU, A812-2/2

Version B

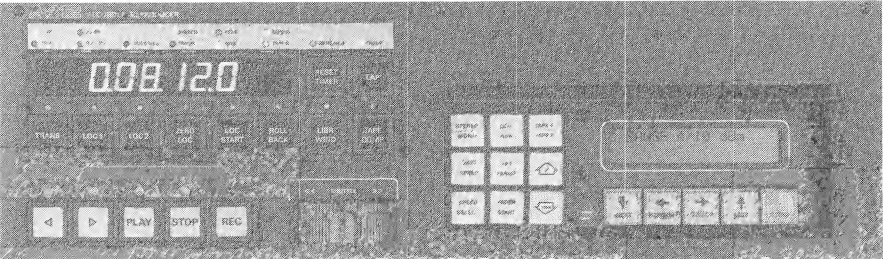


Fig. 2.5.3

Models: A812-2 TC, A812-2 TC VU

Version C

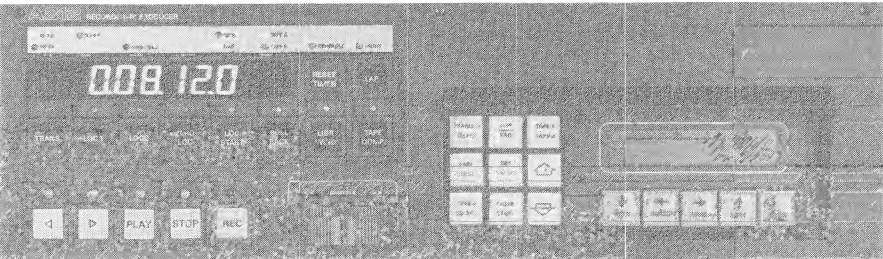


Fig. 2.5.4

A self-adhesive status indication label set with complete lettering is included in the supplied accessories. It can be used if the desired key assignment differs from the standard version.

After the existing status indication label has been peeled off, the unused lamp sockets can be fitted with the supplied LEDs. The new status label is then glued on and the tape recorder programmed as desired.

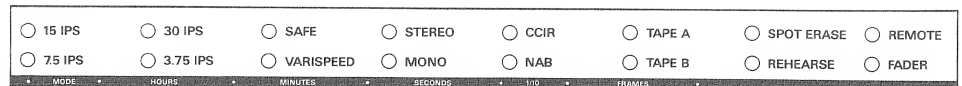


Fig. 2.5.5

2.5.1 Operator Controls

Main Keypad

- [1] Power switch
- [2] Tape lift slide
- [3] Marking device (option)
- [4] Splicing rail
- [5] Scissors (option)
Main keypad
- [6] < Rewind key
- [7] > Forward wind key
- [8] **PLAY:** key
- [9] **STOP:** This key has priority over all tape transport keys and cancels any active synchronizer LOOP. If STOP and LOC START 1...5 are pressed simultaneously, the stored locator addresses are displayed. Certain function keys (such as STEREO/MONO, CCIR/NAB, TAPE A/TAPE B, FRAMES/S SELECT, OFFSET ON/OFF) are only accessible if the STOP key is pressed simultaneously.
- [10] **REC:** Record key, only active together with PLAY (provided the recording channel is not switched to SAFE mode). Depending on the programming, it is possible to switch either directly to record by pressing the REC key (RECORD B), or PLAY + REC must be pressed (RECORD A).
- [12] **SHUTTLE wheel:** For positioning the tape with continuously variable tape speed. Center position = STOP, left-hand limit position = max. SHUTTLE rewind speed, right-hand limit position = max. SHUTTLE forward wind speed.
- [13] **SHUTTLE BAR:** Bar above the SHUTTLE wheel [12]. When the SHUTTLE BAR is pressed the spooling speed selected with the SHUTTLE wheel will be stored.

Secondary keypad

- [15] Display field for keys [34] to [42]
- [16] **LED-tape timer** Real-time indication for all tape speeds in hours, minutes, seconds, and tenths of seconds, switchable to a second tape timer with user-selectable reference.
- [17] **RESET TIMER:** Reset key for the tape timer [16].
- [18] **LAP:** Switches the (main) tape timer to a second timer with user-selectable reference. An "L" is shown as long as the reading of the second timer is displayed.

- [19] **TRANS (TRANSFER):** Preselection key for storing the current tape timer reading (functions also when the second timer has been activated with LAP). In order to store the timer reading in one of the 5 LOC memories, press one of the keys LOC1...LOC5; the tape timer continues to count. If the timer reading is not to be transferred into a LOC memory, the tape timer can be reenabled by pressing TRANS a second time.
- [20] **LOC1:** Automatically searches the tape address stored with [19]. The LOCATE address is displayed as long as this key is pressed.
- [21] **LOC2:** Analogous to LOC1 [20].
- [22] **LOC ZERO:** Searches the tape address that corresponds to the timer reading 0.00.00.0. Relates to the corresponding zero position of the tape timer in normal mode or in LAP mode.
- [23] **LOC START:** Automatically searches the tape address at which the last PLAY command (or PLAY + REC, but only from STOP) has been entered. This is followed by a STOP (function LOC START STOP), PLAY (function LOC START PLAY, default programming) or RECORD (LOC START REC).
- [24] **ROLLBACK:** Rewinds the tape by the programmed amount between 1 and 59 seconds. Default value: 15 seconds. There are three programming possibilities: Rollback-Play (default), Rollback-Stop, Rollback-Rec.
- [25] **LIBRARY WIND:** Reduced spooling speed for producing library quality pancakes. Preselection key, initiates the reduced speed in conjunction with one of the spooling speeds [6] or [7]. This function can be cancelled by pressing LIBRARY WIND a second time. Speed programmable from 0.1 to 15 m/s in increments of 0.1 m/s; default value 5 m/s.
- [26] **TAPE DUMP:** Dump edit mode. Four programming possibilities: TAPE DUMP-A, tape timer enabled; TAPE DUMP-B, tape timer disabled; TAPE DUMP-C, dump edit preselection by pressing TAPE DUMP and initiated with PLAY, interrupted with STOP, tape timer enabled; TAPE DUMP-D, same as TAPE DUMP-C but tape timer disabled.

Function and programming key pad below the hinged cover
--

- [27] **LC display:** Alphanumeric display for indicating the software status, speed deviation in varispeed mode, error messages, programming of audio and tape deck parameters, etc.
- [28] **PROG. ENB** PROGRAMMING ENABLE): Switch for enabling the STORE key [33] (to protect certain functions and parameters, this key must be operated with a hexagon-socket-screw key size 2.5).
- Screw turned to the counterclockwise limit position: programming enabled. Screw turned to the clockwise limit position: programming disabled. Two different disabling possibilities can be programmed:
- Program disable A, all functions are protected against inadvertent modification.
 - Program disable B, programming disabled but the first three tape deck parameters (LIBRARY WIND), max. wind, rollback time) can be modified and stored.

		<div><div>[29] V/NEXT</div><div>[30] CURSOR/<</div><div>[31] CURSOR/></div><div>[32] ^/LAST</div></div>	Keys for paging in the menu and for moving the cursor on the LC display
[33]	STORE:	Key for storing a modified audio or tape deck parameter, for changing over a function that has not been assigned to a key, for reprogramming a key function (if pressed together with the corresponding key), or for acknowledging an error message.	
[34]		<div><div>■ STEREO MONO (for versions A, B): stereo/mono selector (only in conjunction with STOP!).</div><div>■ FRAMES/S SELECT (for version C): Selection of the time code type (24 / 25 / 29.97 / 30 frames/sec); only on conjunction with STOP!</div></div>	
[35]		<div><div>■ MASTER SAFE (for version A): Record inhibition for machines without SAFE/READY switch.</div><div>■ CCIR-NAB (for versions B, C): Selector switch for the equalization standard (only in conjunction with STOP!).</div></div>	
[36]	TYPE A-TAPE B:	Selector switch for two tape types (only in conjunction with STOP!).	
[37]	VARISP. ON/OFF:	On/off switch for variable tape speed.	
[38]	SET VARISP.:	Activates the VARISPEED input with the aid of the UP [39] and DOWN [42] keys.	
[39]	UP,...[42] DOWN:	<div><div>multifunction keys:</div><div><div>■ In conjunction with the keys [29-32]: For paging through the menu and for the audio and tape deck parameters.</div><div>■ In conjunction with the VARISPEED function: For selecting the desired tape speed:</div><div>■ In conjunction with the functions SET ADDRESS and SET TIMER: For entering the locator addresses and setting the tape timer.</div></div></div>	
[40]	SPEED SELECT:	"Wraparound" key for selecting the speed. Each time this key is pressed the next higher or next lower speed is selected.	
<div><div>Version A: 3.75/7.5/15 ips</div><div>Version B: 3.75/7.5/15/30 ips</div><div>Version C: 7.5/15/30 ips</div></div>			

- [41] **FADER:** Disables the local keypad, fader start is given priority. Four programming possibilities:
- **FADER A:**
FADER START without enable key. After the FADER START the local keypad is disabled and the built-in monitor speaker (but not the headphones) is muted. When the fader is pulled back (= no voltage), the tape recorder switches to STOP but muting of the monitor speaker is only cancelled when the tape has come to a standstill.
 - **FADER B:**
FADER START with enable key (FADER START READY), the local keyboard is also active when FADER START is enabled. After the FADER START the local keypad is disabled; default programming.
 - **FADER C**
Same as FADER START B, except that the local keypad is inhibited when FADER START is enabled.
 - **FADER D:**
FADER START with enable key (FADER START READY), the local keypad is also active when FADER START is enabled. After the FADER START the built-in monitor speaker (but not the headphones) is muted. If after a FADER START a key of the local keypad is activated in PLAY mode, muting of the monitor speaker is cancelled. If FADER START is not enabled, actuation of the FADER switch does not influence the operating state of the tape recorder.
- In the event that the tape tears during a FADER START, the tape deck must be reactivated with the FADER switch.

- [42] **DOWN:** Multifunction key, analogous to [39] UP.

Operator controls in the penthouse (if configured)

- [50] **REC:** Record pilot lamp; is light when the channel is switched to record mode.
- [51] **READY:** Channel is enabled for recording.
- [52] **SAFE:** Channel is disabled for recording.
- [53] **INP:** The input signal is connected to the output.
- [54] **SYNC:** The sync signal is connected to the output.
- [55] **REP:** The reproduce signal is connected to the output.
- [56] **CODE LEVEL** (only on code channel control): This time code pilot light is light when the time code is reproduced from tape or when the time code level at the input is large enough (depending on the setting of the input selector INP/SYNC/REP).
- [57] **Output meter:** VU-meter or peak program meter (PPM), internally switchable.
- [58] **RECORD LEVEL:** Level potentiometer for record mode.

- [59] **REPRO/SYNC LEVEL:** Level potentiometer for play mode or sync reproduction.
- [60] **UNCAL:** Enables the level potentiometer.
Switched off: Calibrated line level.
Operator controls for the monitor speaker (in the console penthouse or the tape deck cover):
- [61] **INPUT:** The input signal of the machine is heard via the monitor speaker.
- [62] **TAPE:** The output signal of the machine is heard via the monitor speaker.
- [63] **CH1:** Channel 1 is connected to the monitor speaker.
- [64] **1+2/CUE:** The sum of both channels or the CUE channel (only for TC versions) is connected to the monitor speaker. This function is programmable with jumpers.
- [65] **CH2:** Channel 2 is connected to the monitor speaker.
- [66] **VOLUME:** Volume control for the monitor speaker.
- [67] **PHONES:** Phones socket (on models with console penthouse this socket is located at the monitor speaker, on models without console penthouse it is located above the hinged cover of the amplifier bay).

2.5.2 Power Switch

CAUTION: Before you switch on the tape recorder for the first time, check that the setting of the line voltage selector agrees with the local mains voltage.
The fuse rating must be checked whenever the setting of the line voltage selector is changed.

The power switch is located at the top edge of the tape deck cover. The tape recorder can be switched on after it has been connected to the mains.

When the tape recorder is switched on, the previously active operating state is automatically reestablished and displayed. Exceptions: the machine always switches to STOP (the STOP lamp flashes if the tape is missing or threaded loosely). On machines with a SAFE/READY switch the channels are switched to SAFE. When the machine is switched on the main functions are automatically tested by the microprocessor. Any errors are shown on the LC display.

2.5.3 Indications at Power on Time

After the machine has been switched on, some of the pilot lamps may light up briefly, including READY or REC. However, the record function is electronically inhibited during this phase.

The following LEDs subsequently light up and indicate the current operating state of the tape recorder:

- STOP: The stop function is active. If the LED flashes this means that both tape tension sensors are in their home position (no tape mounted or tape loosely inserted). slack.
- CCIR or NAB: Selected equalization standard
- STEREO or MONO (if configured).
- TAPE A or TAPE B: Selected tape type.
- Tape speed: for example 15 or 7.5 ips.
- Output selector: The selected output is indicated with INPUT

Depending on the configuration of the tape recorder the following may also be light:

- Output meters
- On the track selector: SAFE
- On the output selector: Selected output (INP, SYNC or REC)
- UNCAL (if the key is pressed)

On the LC display the software status of the tape recorder (creation date of the master software, calendar week/year) is briefly displayed, followed by a list of the options with which the machine is equipped, possible error messages in plain text or the message "no errors detected", and subsequently the current status of the machine (line level, for TC versions also the offset and the selected time code type).

2.5.4 Inserting the Tape

Adapter for 3-pronged (CINE) reels and for DIN hubs are engaged in the spindles; adapters for NAB reels or hubs are inserted into the spindles and fixed by pressing the red button in the middle of the adapter. The adapters are released by lightly pressing against the edge of the spindles.

**Three-pronged reel
with flange**

(DIN 45514, 45517)

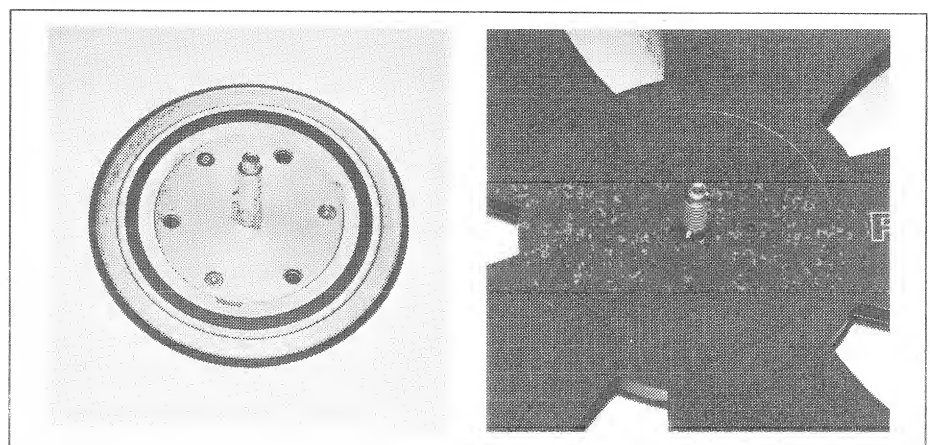


Fig. 2.5.6

Install the adapters for 3-pronged reels. Mount the full reel on the left-hand spindle, the empty reel on the right-hand spindle. Pull out the three-pronged guide and lock the adapter with a 60° turn.

NAB reel:

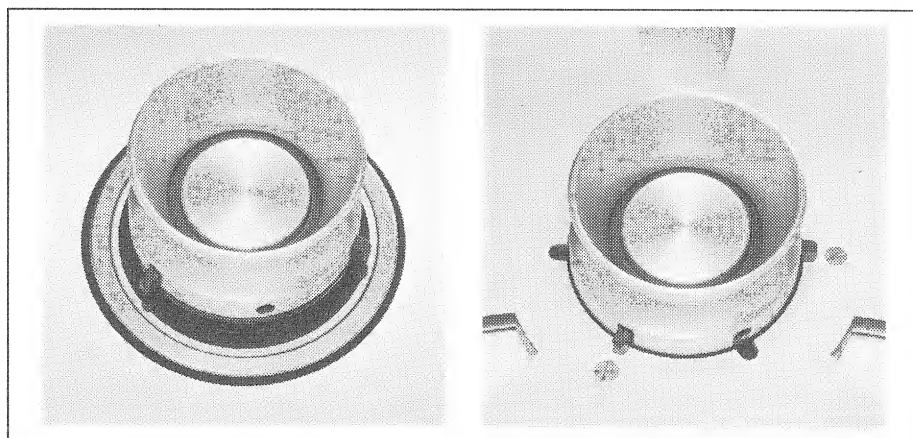


Fig. 2.5.7

NAB adapter

Install the NAB adapter. Mount the NAB reel on the adapter or, if a self-supporting pancake is used, mount an NAB hub on the adapter and turn the top of the adapter clockwise until it engages.

Self-supporting pancake

(Hub according to DIN 45515)

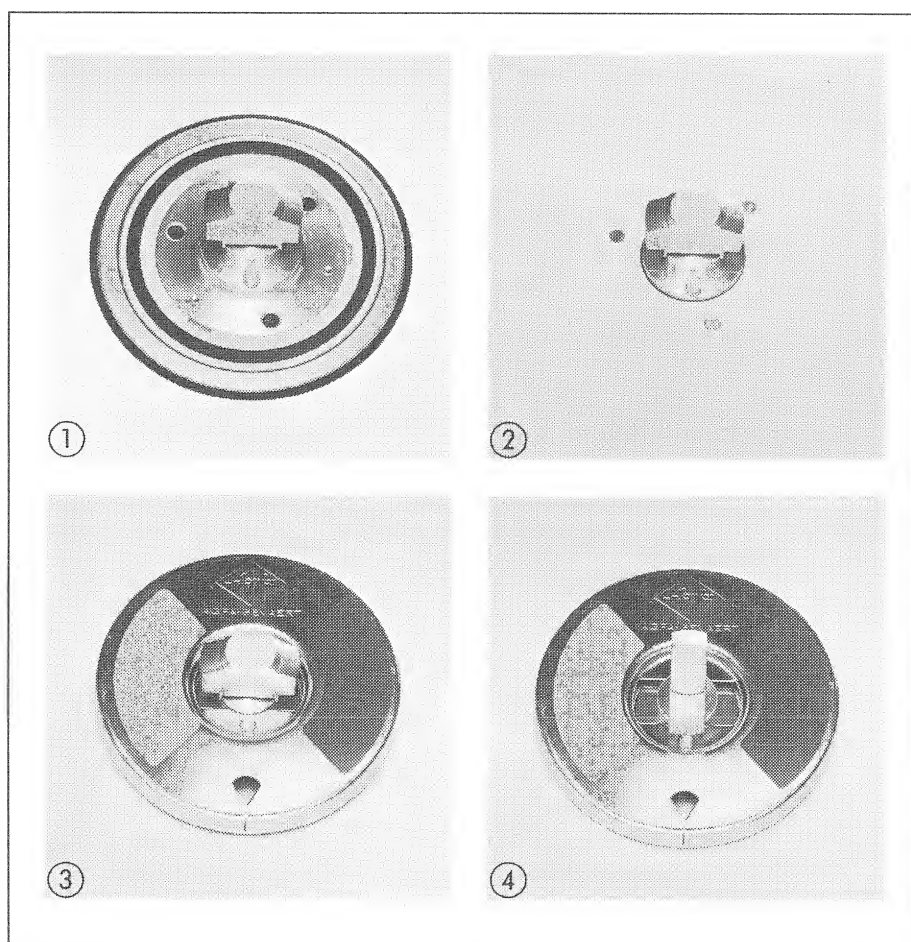


Fig. 2.5.8

1 DIN adapter	2 DIN platter
3 center of pancake, unlocked	4 center of pancake, locked,

Install the DIN adapter, mount the spindle on the adapter and engage the driving pin of the reel flange in the holes of the spindle.

Mount the full pancake on the left-hand side. Lift the clip and twist it by 90° until it rests on the guide pins. Mount an empty reel flange and an empty hub on the right-hand side.

Threading the tape

Before you thread the tape raise the head shield in front of the soundheads.



Fig. 2.5.9

Thread the tape as illustrated. Wrap the leading end of the tape around the right-hand reel and secure it by giving the reel a few counterclockwise turns. The STOP lamp flashes. When one of the spooling keys is pressed, the tape is slowly tensioned (even if it is inserted only loosely) and the STOP key changes to steady light. The A812 is now ready for operation.

Set the tape timer to zero by pressing the RESET TIMER key. Move the head shield over the soundheads, if necessary.

2.5.5 Tape Speeds

Up to four tape speeds are available; various models are programmed for the three most commonly used tape speeds (e.g. in time code versions the slowest speed is not programmed because operation with time code is not advisable at 3.75 ips). When you press the SPEED SELECT key (below the hinged cover) the tape speed is increased by one step or it is changed back from the highest to the lowest speed; the corresponding pilot LED lights up

2.5.6 Play

When the local PLAY key, a corresponding remote control key, or a fader start device is actuated, the tape recorder switches to play mode. The PLAY LED lights up.

Play mode can be cancelled by pressing the STOP key.

If the PLAY key is pressed while a recording is in progress, the machine switches to play without interruption.

If the PLAY key is pressed in spooling mode, the tape is immediately decelerated and the PLAY function preselected. As soon as the magnetic tape has come to a standstill or been decelerated to the nominal speed in the play direction, the machine switches to play mode, the PLAY lamp is continuously light.

From the PLAY function you can switch directly to spooling mode or an autolocator function.

2.5.7 Varispeed Control

The deviation relative to the nominal speed can be selected with the built-in varispeed control within the range of ± 7.5 semitones.

With the keys SET VARISP and UP or DOWN you can preselect the tape speed without changing the current nominal speed. The speed is indicated on the LC display either in semitones, in percent of the nominal speed, or as the actual tape speed in inches per second (ips).

Pressing the VARISPEED key switches from the nominal speed to the changed speed - the VARISPEED pilot lamp above the tape timer flashes. When the function VARISPEED INDICATION ENHANCED is active, the two LEDs of the spooling keys < and > also flash.

If the functions SET VARISP and VARISPEED are simultaneously active, the speed change is performed directly (with the UP and DOWN keys). The result is directly audible during playback.

The delay correction for the drop-in and drop-out (see Section 2.5.9) is set for the nominal speed; when recordings in varispeed mode a corresponding offset will result.

2.5.8 Record

When the REC and the PLAY keys are pressed simultaneously, the machine switches to record mode and the PLAY and REC keys light up.

If PLAY and REC are pressed in spooling mode, the tape is decelerated, the record function preselected, and the REC and PLAY lamps flash. As soon as the tape has been decelerated to the nominal speed, the record mode is automatically initiated and the two lamps change to steady light.

From record mode it is possible to switch directly to fast wind, play or a locator function by pressing the corresponding key.

**Models with
MASTER SAFE key:**

The MASTER SAFE function is used for record inhibition on machines without SAFE/READY key. However, this function can also be programmed on machines equipped with a SAFE/READY key in which case the MASTER SAFE function is a higher ranking record inhibition. As long as MASTER SAFE is active, the machine cannot be prepared for recording with the READY key.

**Models with
SAFE/READY keys:**

With the SAFE key you can inhibit recording on the corresponding channel. The yellow SAFE lamp lights up; when PLAY and REC are pressed the tape deck is started; the old recording on the audio track of the channel protected with SAFE is preserved and can be monitored (REP or SYNC).

To prepare a channel for recording the corresponding READY key must be pressed. The green READY pilot lamp lights up. When the recording is started with PLAY and REC, the red REC pilot lamp lights up to signal that the record mode is active.

While a recording is in progress you can inhibit the channels directly with SAFE. In order to reenale them for recording you must first press the READY keys. After the READY lamp lights up you must press either PLAY and REC or only REC, depending on the internal programming.

On 2-channel machines the two channels are operated either in parallel or individually, depending on the programming (function CH CONTR PAR/INDIV).

Drop-in:

Click-free changeover from play or SYNC reproduction to record mode is possible. Depending on the jumper setting, this is achieved by either pressing REC together with PLAY (RECORD A) or only the REC key (RECORD B). Depending on the programming the record erase head and the soundhead are activated either simultaneously, or the record head is activated with a speed-dependent delay in such a way that the erase head and the record head are switched on at exactly the same tape location (function IN-OUT DEL. Y/N).

Drop-out:

Click-free changeover from record mode to play or SYNC reproduce mode is possible by pressing the PLAY key.

Depending on the programming the erase head and the record head are either switched off simultaneously or the record head is deactivated with a speed-dependent delay in such a way that the erase head and the record head are switched off at exactly the same tape location (function IN-OUT DEL. Y/N).

A drop-out with SAFE always deactivates both heads simultaneously.

A drop-out with STOP first completes the drop-out before the tape is stopped.

Overlapping drop-in:

Mechanical (fade-IN/fade-OUT)

If e.g. an applause is to be faded in with overlap at the end of a recording, the magnetic tape can be lifted off the record and the erase head by means of the tape lifter [4].

The machine is then restarted in record mode. When the tape lifter is slowly released, the tape first contacts the record head and the applause is added to the existing modulation (e.g. the end of a music selection). When the tape lifter is released completely, the tape also contacts the erase head. The existing modulation is erased and only the applause is recorded.

2.5.9 SYNC Reproduction

The SYNC key switches the corresponding channel to SYNC reproduction. In this mode the tape induces an audio signal in the record head. This signal is amplified and equalized in the reproduce amplifier. Since there is no time offset between the record and the reproduce head in this mode, accurate drop-in is possible.

Sync reproduction is not intended to be used at 3.75 ips (quality generally not adequate!). All sync audio parameters at this speed are normally set to 00. However, it is feasible to calibrate the tape recorder also for 3.75 ips sync reproduction if quality degradation is acceptable.

The reproduce bandwidth in sync mode is limited to approx. 12 kHz. For special mixdowns the bandwidth can be increased to 20 kHz with the aid of a jumper (see Section 4.9.2). However, strong cross talk from the record channel to the sync channel must be expected at frequencies above 12 kHz.

SYNC preselection:

SYNC reproduction can be preselected for a channel that has been readied for record mode. When the SYNC key is pressed during a recording, the corresponding channel is connected to the input (INP). This channel is automatically switched to SYNC reproduction when the drop-out occurs (PLAY, SAFE, STOP).

2.5.10 Spooling Mode

The < key activates the fast wind in the forward direction, the > key in the rewind direction. The tape will be wound at the programmed spooling speed.

Spooling is automatically cancelled by STOP, PLAY, REC+PLAY, SHUTTLE, TAPE DUMP, LOC functions, and by spooling in the opposite direction.

It is admissible to switch from fast forward directly to rewind and vice versa, or directly from play or record to rewind.

During spooling it is possible to switch directly to play or record. The LED of the preselected function flashes; the magnetic tape is decelerated, and the preselected function is activated when the tape has come to a stop or reached the nominal speed.

Tape lifting

In spooling mode the tape is automatically lifted off the soundheads in order to minimize wear on the tape and the audio heads.

The tape lift pin can be engaged by actuating the programmable momentary action LIFTER key.

Important !!

DO NOT ACTUATE THE CONSOLE TILTING MECHANISM IN SPOOLING MODE - THE TAPE, THE REELS, THE ADAPTERS, AND THE TAPE DECK COVER CAN BE DAMAGED BY THE STRONG CENTRIFUGAL FORCE !!

2.5.11 Producing Pancakes at Reduced Spooling Speeds, (LIBRARY WIND)

The reduced spooling speed LIBRARY WIND is intended for pancakes that are to be saved in a library. The speed can be programmed between 0.1 and 15 m/s in increments of 0.1 m/s (default: 5 m/s). The library wind function is activated by pressing the LIBRARY WIND key and followed by the spooling key < or > . The library wind function is cancelled by pressing LIBRARY WIND a second time.

2.5.12 Stop

The STOP key has the highest priority and cancels all functions such as play, record, spooling, and autolocator. After this key is pressed the tape is decelerated and the stop lamp flashes until the tape has come to a standstill. The STOP lamp subsequently changes to continuous light.

The tape tension sensors are automatically disabled when the tape stands still so that the tape can be shuttled manually for editing.

Any new operating mode entered during the deceleration of the tape is stored and activated as soon as the nominal speed has been attained. If STOP is pressed concurrently with one of the LOC1...LOC5 keys, the corresponding locator address is displayed on the tape timer.

Various function keys can only be operated in conjunction with STOP (e.g. tape type selection (TAPE A/TAPE B), equalization standard (CCIR/NAB), mono/stereo changeover (STEREO/MONO), changeover of the time code standard (FRAME/S and OFFSET ON/OFF).

2.5.13 Autolocator

The autolocator supports the following operating modes:

- ZERO LOC: Zerolocator. When this key is pressed a fast forward or rewind is initiated until the tape address corresponding to the counter reading 0.00.00.0 is found, regardless of whether the zero position of the main timer or the auxiliary timer is to be searched.
- LOC START (programmable): When this key is pressed a fast forward or rewind is initiated until the tape address is reached at which the last play or record command was entered from STOP or spooling mode. Depending on the programming, either the stop (function LOC START STOP), play (function LOC START PLAY) or record (function LOC START REC) is subsequently activated.
- LOC1...LOC5 (programmable): Transfer locator. Up to five tape addresses can be stored and automatically searched in spooling mode by pressing the corresponding key.

Programming:

- With the programmable TRANS key: Search the desired tape address and press the TRANS key when the tape is close to the desired address. The address can be stored as long as the TRANS LED is light. When the exact position has been found, press the LOC key. When the address has been stored the TRANS LED switches off. To program a new entry the TRANS key must be pressed again.
- With the programmable HOLD key: At the desired tape address press the HOLD key. The corresponding timer reading will be "frozen" on the display (however the tape timer continues to run). When one of the LOC keys is pressed, the content of the display is transferred to the corresponding memory and the current timer reading reappears on the display.

Reading out a LOC address:

During a LOC process: Press the corresponding LOC key a second time.

In STOP condition: Press the STOP key plus the corresponding LOC key.

PLAY or REC preselection:

If PLAY or PLAY + REC is pressed during a locate function (ZERO LOC, LOC START, LOC1...5), the tape recorder automatically switches to play or record when the corresponding tape address is reached.

The stored locator addresses are not lost when the tape recorder is switched off.

Important !!

Because the locator addresses are not relative to the tape addresses, unwanted offsets will occur if the RESET TIMER key is inadvertently pressed.

2.5.14 Tape Timer

The electronic tape timer always displays the real tape time in hours, minutes, seconds, and tenths of seconds, relative to the selected nominal tape speed. The timer has a display range -9 h 59

min 59.9 s to 23 h 59 min 59.9s. Numbers that are outside the display range are identified by a subscripted "u" (underflow) or a superscripted "o" (overflow) in the tens position of the hours, for example: o4.00.00.0 or u3.03.35.7 Fractional tenths of seconds are rounded. The timer can be set to 0.00.00.0 by pressing the RESET TIMER key.

When the end of the tape or a torn tape is detected, the timer stops automatically. In dump edit mode (TAPE DUMP) the timer either stops or continues to run, depending on which of the four TAPE DUMP modes has been programmed (default: TAPE DUMP A).

2.5.15 Auxiliary Timer LAP

The LAP key activates a second (auxiliary) tape timer with a user-selectable reference. An "L" appears in the first position of the display.

The auxiliary timer can be set to zero (RESET TIMER key) at any tape address and can for example be used for determining the exact playing time of a selection without having to compute the difference between the start and the end time.

When the LAP key is pressed a second time, the display switches back to the main timer, and the "L" in the first display position disappears.

2.5.16 Remote Controls

The following functions can be activated from the parallel remote control unit: play, record, fast wind, stop, RESET TIMER, ZERO LOC, LOC START, RECAP (rewind for as long as this key is pressed, and subsequent activation of play), or LIFTER (defeating the tape lift during fast wind), and FADER (FADER START ready).

With the serial remote control it is possible to operate all functions that can be programmed on the local keypad, regardless of how the local keys are programmed. In addition the serial remote control features a tape timer display and a SHUTTLE wheel. The keys are programmed in the same manner as those on the local keypad.

- Operation with the programmable function REMOTE A: When the REMOTE key is pressed the corresponding pilot lamp lights up and the local keypad is disabled. When the REMOTE key is pressed a second time, the local keypad is reenabled and the pilot light switches off. In this condition the keys of the remote control are dead.
- Operation with the programmable function REMOTE B: When the REMOTE key is pressed, the corresponding pilot lamp lights up, the keys of the remote control unit and the keys of the local keypad are equivalent. When the REMOTE key is pressed a second time the remote control is deactivated and only the local keypad is active. The pilot light switches off.
- Operation without REMOTE A or REMOTE B function: The REMOTE LED is continuously light, the keys of the local keypad and the remote control units are equivalent.

With the fader start circuit the tape recorder can be remotely switched to play mode. The FADER START operation can be set up by a switch that interconnects contact 6 (signal SR-FADRY) and contact 1 (ground) of the parallel remote control socket (FADER START READY). A voltage of 5 to 24 V AC or DC can now be connected to the contacts 11 and 12. The tape recorder is switched to play mode. This setup is also possible with the programmable FADER key on the local keypad or the serial remote control, or with the FADER KEY of the parallel remote control (initiates the same function FADER A, B, C or D that is assigned to the local FADER key).

- Operation with the programmable function FADER A: FADER START without setup key. After the FADER START the local keypad and the remote control keys are inhibited, the built-in monitor speaker (but not the headphones) is muted. When the fader is pulled back (fader switch opens), the tape recorder is switched to STOP, however muting of the monitor speaker is not cancelled until the tape has come to a full stop.
- Operation with the programmable function FADER B: FADER START with enable key (FADER START READY), local and remote keypads are active, FADER START enabled. After the FADER START the local keypad is disabled; default programming.
- Operation with the programmable function FADER C: Same as FADER START B, except that both the local and the remote keypads are inhibited when FADER START is enabled.
- Operation with the programmable function FADER D: FADER START with enable key (FADER START READY), both the local and the remote keypads remain active even when FADER START is enabled. After the FADER START the built-in monitor speaker (but not the headphones) is muted. If any key of the local or remote keypad is operated when the machine is in PLAY mode after FADER START, the muting of the monitor speaker is cancelled. If FADER START is not enabled, the actuation of the fader switch does not cause any change in the operating state of the tape recorder.

2.5.17 VU-Meter Panel

By means of a jumper the level indication can be changed over from PPM to VU characteristic.

- UNCAL: When this key is pressed the corresponding level potentiometers are enabled; this status is signalled by a pilot light. When the UNCAL key is released, the corresponding potentiometer is disabled and the input or output level is set to line level.

Output selector:

- INP: connects the input signal to the output and to the output meter of the tape recorder.
- SYNC: connects the reproduce signal from the record head to the output and to the output meter of the tape recorder. This operating mode can be preselected for recording. (As long as the corresponding channel is enabled for recording, it is switched to INPUT because playback with the record head is not possible during a recording. As soon as the channel is switched to READY or SAFE, SYNC reproduction is automatically activated).
- REP: Connects the reproduce signal to the output and to the output meter of the tape recorder.

In record mode, convenient tape/source monitoring is possible with the INP and REP keys.

INP, SYNC, and REP are mutually self-cancelling. On 2-channel machines both channels are operated either in parallel or individually (function CH CONTR PAR/INDIV).

2.5.18 Monitor

On models without penthouse the monitor speaker is built into the tape deck cover; on machines with console penthouse it is built into the monitor panel. On models with penthouse the headphones socket is located on the monitor panel, on models without penthouse it is located on the left above the amplifier bay.

With the mutually self-cancelling switches INPUT and TAPE the signal can be switched between input and output (tapped before the corresponding level potentiometers).

Channel 1 (CH 1) or channel 2 (CH 2) can be monitored. In addition either the sum of both channels or the CUE channel (time code) can be monitored, depending on the position of the jumpers on the monitor amplifier, see Section 4.9.6. If the jumpers on the monitor amplifier are in the CUE position, the sum of both channels can still be monitored by simultaneously pressing the keys CH1 and CH2.

The volume can be adjusted with the VOLUME control knob.

2.5.19 Mono-Stereo Switch (Option)

Stereo machines can be equipped or retrofitted with a mono/stereo switch. When the machine is switched on, the last operating state prior to switch-off is automatically reestablished and displayed.

To switch from stereo to mono and vice versa, the STOP and STEREO-MONO switch must be pressed simultaneously.

If the machine is not fitted with a mono-stereo module, the two pilot lamps STEREO and MONO remain dark.

2.5.20 Test Generator (Option)

The controls of the test generator are located on the front edge of the test generator module. To operate these controls the amplifier bay must be opened!

When the upper key is pressed, the test generator is switched on (REF lamp is light, i.e. the reference frequency, normally 1 kHz, is selected). Subsequent pressing of this key changes the reference frequency as follows: - 60 Hz - 125 Hz - REF - 10 kHz - 16 kHz - OFF - (REF - 60 Hz - etc.).

With the lower key the generator level can be switched from nominal level to a level that is down by 10 dB. If "-10 dB" is selected, the gain in the reproduce path of the mono-stereo switch is automatically increased by 10 dB; this means that the VU-meter reading of measurements with tape is the same as with nominal level.

The lower key is only enabled if the test generator has previously been switched on with the upper key. After the test generator has been switched on and off with the upper key, nominal level is always available at the output of the test generator.

2.5.21 Time Code Channel (TC-Versions only)

Time code recording	Press the READY key on the time code channel control unit; the READY lamp lights up. Then start the machine in record mode by pressing REC + PLAY; the REC lamp is light. Or while a recording is in progress, press READY and, depending on the programming, REC + PLAY or only REC.
Time code reproduction	Press REP or SYNC and start the machine in PLAY mode. Depending on the setting of the output selector, the green CODE LEVEL lamp is light if a time code signal exists on the TC line input (INPUT position= or on the tape (REP or SYNC position).

2.5.22 Editing, Cutting the Tape

Searching a tape address with fast wind	If the tape position to be searched is approximately known (e.g. start or end of a selection), the tape can be spooled to an address near this point. Press the programmable LIFTER key so that the tape lift pin is pushed behind the soundheads and the modulation becomes audible. As soon as the desired tape location becomes audible, the tape can be fine-positioned with the < and > keys or by actuating the SHUTTLE wheel. Press the STOP key and manually move the tape to the edit position by carefully rotating the two reel flanges.
Searching a tape location with PLAY:	If individual segments with unknown addresses are to be eliminated from a production, they can be searched in normal PLAY mode. When a position has been found, press the STOP key and move the tape to the exact editing position by carefully turning the two reel flanges by hand.
Searching a tape position with the autolocator	The tape address 00.00.00.0 can be searched automatically at spooling speed. The start of a production is automatically stored and can be searched automatically with the LOC START key if the recording has not been interrupted. While a production is in progress, up to 5 tape positions can be stored directly, depending on the programming of the recorder, by pressing TRANS and LOC1 (..5) at the desired position. When the corresponding LOC key is pressed, the desired tape address is automatically searched. The tape can subsequently be fine-positioned by hand.
Cutting with the built-in scissors (option):	Mark the cutting position (position of the reproduce head gap) with a grease marker or a soft pencil on the back of the tape. Move the marked position to the scissors by turning the two reel flanges. The tape is cut by pressing the key. When the TAPE DUMP key is pressed, the unwanted tape segment can be played into the waste basket (see dump edit mode).
Cutting at the reproduce head:	With magnetically neutral scissors the tape can be lifted lightly off the reproduce head and cut exactly in front of the head gap (center of head face) at an angle of 45°.

Marking the tape, cutting in the splicing block:

With the optional marker, a grease pen or a soft pencil, mark the center of the headface on the tape.

Insert the marked position into the splicing block and cut it with a razor blade.

Splicing the tape

Insert the two tape ends with the marked side facing upward into the splicing block. Butt the ends together (without overlap!) and join them with an approx. 20 mm long, 1/4" wide adhesive tape.

2.5.23 Dump Edit Mode

In dump edit mode the right-hand spooling motor is disabled so that unwanted tape segments can be played into the "waste basket".

When the (programmable) TAPE DUMP key is pressed, the recorder switches to play but the right-hand take-up motor is switched off. Four modes are available:

- TAPE DUMP A (default programming for all four standard versions): Tape timer active, cancellation of this function with STOP or by pressing TAPE DUMP a second time.
- TAPE DUMP B: Tape timer disabled, cancellation of this function with STOP or by pressing TAPE DUMP a second time.
- TAPE DUMP C: Pressing TAPE DUMP preselects dump edit mode, activation by pressing PLAY, interruption with STOP. The tape timer remains active. Cancellation of this function only in STOP mode by pressing TAPE DUMP a second time.
- TAPE DUMP D: Same as TAPE DUMP C but the tape timer is disabled.

2.6 Soft Keys

Each control key of the A812 tape recorder (except the four blue and red keys and the UP and DOWN keys of the function and programming keypad below the hinged cover) can be assigned to any of the approx. 100 possible functions or operating modes. It is also possible to directly enter or change over certain modes (subsequently designated as KEYS/MODE) without requiring corresponding programming of the control keys.

In order to simplify the assignment of the keys, the LC display (alphanumeric liquid crystal display on the right front of the tape deck) as well as the opposite downward branching status tree diagram is used.

This diagram consists of

blocks

and

settings

After the tape recorder has been powered on, the first three (possibly four) blocks appear consecutively on the display for a few seconds:

**A812M SOFTWARE VERS
MASTER: WW/YY**

Creation date of the MASTER MPU software, calendar week/year,

A812 OPTION

Indication of the SMPTE/EBU option if installed.

**DEFAULT AUDIO
PARAMETERS LOADED**

If this message appears, the default audio parameters have been loaded after a RAM error. These parameters can deviate slightly from the machine-dependent parameters. The tape recorder can be operated, but deviations from the optimum calibration data are inevitable. If the machine-dependent parameters have been written down or saved on tape, they can be reentered or reloaded.

ERR:xxxxxxxx

Plain-text error message (if any) resulting from the automatic self-test (see Section 2.7), or the message "no errors detected", and

L RANGE 0/6 dBm
OFS: NONE FPS:

Line level with which the tape recorder operates. The second line appears only if the machine is equipped with a time code headblock; OFS = offset between time code channel and audio channel in inches, FPS = number of full frames per second.

The start-up process stops here. The above four (or five) blocks can be recalled in normal operation by pressing the keys |^/LAST.

When the programming lock, switch [28], is closed (hexagon-socket screw key size 2.5; clockwise limit position) the STORE key is inhibited.

Two different program locks are possible:

- **Program lock A:** All functions are protected against inadvertent modification.
- **Program lock B:** All programming is inhibited except for the first three tape deck parameters.

The following tape deck parameters can be modified and stored: reduced and maximum spooling speed, and ROLLBACK time. Error messages can be still acknowledged with STORE when the programming lock is closed. It is not possible to reprogram any key functions when the lock is closed.

Any attempt will be signalled on the LC display with the message "program mode not enabled".

To open the programming lock, switch [28]: starting from the clockwise limit position give the screw approx. 1 - 2 counterclockwise turns.

The keys v/NEXT, </CURSOR, >/CURSOR, and ^/LAST are used for navigating up and down within the tree diagram. In order to branch off, position the cursor under the desired menu. In the bottom half of the tree diagram you can page forward with the "up" key and backward with the "down" key.

2.6.1 Key Numbering

The keypad is designed as a matrix comprising 5 rows with up to 10 keys each.

Numbering:

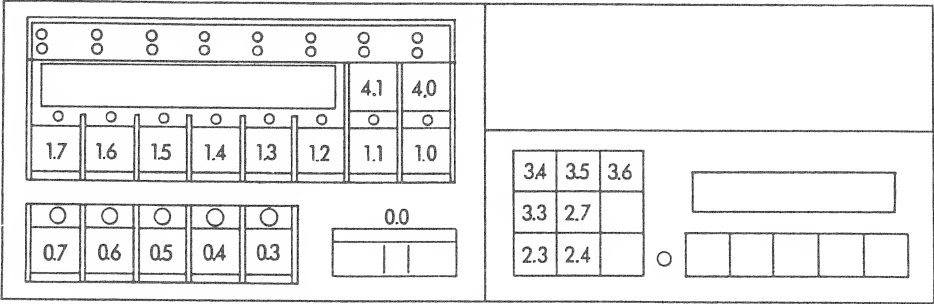


Fig. 2.6.1

2.6.2 Available Functions (A812) Software Release 6/89

Nr.	Function	Type	Key No. in version:		
			A	B	C
009	L RANGE 0/ 6 dBm Y/N	K/M	---	---	---
010	L RANGE 4/10 dBm Y/N	K/M	---	---	---
011	L RANGE 8/14 dBm Y/N	K/M	---	---	---
012	L RANGE 10/16 dBmY/N	K/M	---	---	---
021	MASTER SAFE Y/N	K/M	3.5	---	---
022	TAPE A	K/M	---	---	---
023	TAPE B	K/M	---	---	---
024	TAPE A/B	K/M	3.6	3.6	3.6
031	MONO/STEREO	K/M	3.4	3.4	---
032	CCIR/NAB	K/M	---	3.5	3.5
033	CCIR/NAB SAME/INDIV	K/M	---	---	---
034	REP/SYN SAME/INDIV	K/M	---	---	---
041	AUTO MUTE ON/OFF	K/M	---	---	---
042	AUTO INP A Y/N	K/M	---	---	---
043	AUTO INP B Y/N	K/M	---	---	---
044	IN-OUT DEL. Y/N	K/M	---	---	---
046	AUTO LOW PASS Y/N	K/M	---	---	---
051	CH CONTR PAR/INDIV	K/M	---	---	---
101	REHEARSE	K	---	---	---
211	3.75 IPS Y/N	K/M	---	---	---
212	7.5 IPS Y/N	K/M	---	---	---
213	15 IPS Y/N	K/M	---	---	---
214	30 IPS Y/N	K/M	---	---	---
215	3.75/7.5 IPS	K/M	---	---	---
216	7.5/15 IPS	K/M	---	---	---
217	15/30 IPS	K/M	---	---	---
218	3.75/7.5/15 IPS	K/M	2.3	---	---
219	7.5/15/30 IPS	K/M	---	---	2.3
220	3.75/7.5/15/30 IPS	K/M	---	2.3	---
230	FADER MASTER ENABLE	K/M	---	---	---
231	FADER A Y/N	K/M	---	---	---
232	FADER B Y/N	K/M	2.4	2.4	2.4
233	FADER C Y/N	K/M	---	---	---
234	FADER D Y/N	K/M	---	---	---
241	VARISPEED %	K/M	---	---	---
242	VARISPEED HT	K/M	---	---	---
243	VARISPEED IPS	K/M	---	---	---
244	VARISPEED IPS/HT/%	K/M	---	---	---
245	VARISPEED IND. ENH.	K/M	---	---	---
246	SAVE KEY SETTING Y/N	K/M	---	---	---
247	PROGRAM DISABLE A/B	K/M	---	---	---
252	CAPSTAN MODE A/B	K/M	---	---	---
255	REC INDIC MODE A/B	K/M	---	---	---

Nr.	Function	Type	Key No. in version:		
			A	B	C
301	REWIND (<)	K	0.7	0.7	0.7
302	FORWARD (>)	K	0.6	0.6	0.6
303	LIBRARY WIND	K	1.1	1.1	1.1
304	PLAY	K	0.5	0.5	0.5
306	STOP	K	0.4	0.4	0.4
307	RECORD A	K	0.3	0.3	0.3
308	RECORD B	K	---	---	---
311	TRANSFER	K	1.7	1.7	1.7
312	HOLD	K	---	---	---
313	LOC1	K	1.6	1.6	1.6
314	LOC2	K	1.5	1.5	1.5
315	LOC3	K	---	---	---
316	LOC4	K	---	---	---
317	LOC5	K	---	---	---
318	LOC ZERO	K	1.4	1.4	1.4
319	LOC START PLAY	K	1.3	1.3	1.3
320	LOC START STOP	K	---	---	---
321	LOC START REC	K	---	---	---
322	ROLLBACK PLAY	K	1.2	1.2	1.2
323	ROLLBACK STOP	K	---	---	---
324	ROLLBACK REC	K	---	---	---
325	BACKSPACE STOP	K	---	---	---
327	TAPE DUMP A	K	1.0	1.0	1.0
328	TAPE DUMP B	K	---	---	---
329	TAPE DUMP C	K	---	---	---
330	TAPE DUMP D	K	---	---	---
332	LIFTER	K	---	---	---
334	LAP/WATCH DISPLAY	K	4.0	4.0	4.0
335	RESET TIMER	K	4.1	4.1	4.1
336	SET TIMER	K	---	---	---
337	SET ADDRESS	K	---	---	---
338	SET VARISPEED	K	2.7	2.7	2.7
339	VARISPEED ON/OFF	K	3.3	3.3	3.3
345	REMOTE A R.CTL ONLY	K	---	---	---
346	REMOTE B REM+LOCAL	K	---	---	---
347	SHUTTLE BAR	K	0.0	0.0	0.0
351	NO FUNCTION	K	---	---	---
401	24 FRAMES/SEC Y/N	K/M	---	---	---
402	25 FRAMES/SEC Y/N	K/M	---	---	---
403	29.97 FRAMES/SEC Y/N	K/M	---	---	---
404	30 FRAMES/SEC Y/N	K/M	---	---	---
406	25/29.97 FRAMES/SEC	K/M	---	---	---
407	29.97/30 FRAMES/SEC	K/M	---	---	---
408	24/25/29/30 F/SEC	K/M	---	---	3.4
409	OFFSET 1.2" Y/N	K/M	---	---	---
410	TC MODE NORM/SPEC	K/M	---	---	---

2.6.3 Description of the Functions

L RANGE	0/6 dBm Y/N	(Nr. 009) KEYS/MODE
L RANGE	4/10 dBm Y/N	(Nr. 010) KEYS/MODE
L RANGE	8/14 dBm Y/N	(Nr. 011) KEYS/MODE
L RANGE	10/16 dBm Y/N	(Nr. 012) KEYS/MODE

Definition of the line level with which the tape recorder operates.
The first of the two level specifications is used if the VU-meter is programmed for VU characteristic, the second is used for PPM characteristic.
If the line level used in the studio differs from the four existing parameters, select the value that comes closest to the studio level and adjust the internal record and reproduce levels in such a way that the tape recorder operates with the desired flux.

MASTER SAFE Y/N	(Nr. 021) KEYS/MODE
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Record inhibition for machines without SAFE/READY switch or higher ranking SAFE key for machines with SAFE/READY switch. On/off key.

TAPE A Y/N	(Nr. 022) KEYS/MODE
TAPE B Y/N	(Nr. 023) KEYS/MODE
TAPE A/B	(Nr. 024) KEYS/MODE

Tape type selector; either two individual keys with mutual self-cancellation (functions 022 and 023) or one changeover key.
When the machine is switched on, the last selected tape type will automatically be selected.
Operation: Press the STOP key; the tape type can be selected as long as the STOP key is pressed.

MONO/STEREO KEYS/MODE	(Nr. 031)
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Mono/stereo changeover (option)
When a stereo machine is switched on, the last selected status will automatically be selected.

CCIR/NAB	(Nr. 032) KEYS/MODE
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Equalization selector. When the machine is switched on, the last selected equalization standard will automatically be selected.

CCIR/NAB SAME/INDIV	(Nr. 033) KEYS/MODE
---------------------	---------------------

Changeover to identical audio parameters for both equalization standards.
If identical audio parameters are desired for both equalization standards, first press to the desired parameter and press STORE; the parameter is automatically accepted for the second equalization standard.

Exception:

Record and reproduce time constants (EQU REC and EQU REP).

REP/SYN SAME/INDIV

(Nr. 034) KEYS/MODE

Accepting the reproduce audio parameters for sync mode. Same procedure as for function 033. The output selector must be in the REP position.

AUTO MUTE ON/OFF

(Nr. 041) KEYS/MODE

Automatic muting in spooling mode (exception: when the tape LIFTER is engaged!) and during the acceleration phase (until the nominal speed is attained). On/off key. Default: OFF.

AUTO INP A

(Nr. 042) KEYS/MODE

AUTO INP B

(Nr. 043) KEYS/MODE

Selection of the AUTO INPUT function. All channels switched to SYNC (AUTO INP A) or only the channels switched to SYNC and READY (AUTO INP B) are switched to INPUT in the operating modes STOP, REWIND, FORWARD, LOC, AND ROLLBACK.

On/off key.

Default: AUTO INP B.

IN-OUT DEL. Y/N

(Nr. 044) KEYS/MODE

Delay correction. The record head is switched on/off with a delay during drop-in and drop-out. On/off key.

For the REHEARSE function IN-OUT DEL = ON (i.e. YES) is a prerequisite!

Default: YES.

AUTO LOW PASS

(Nr. 046) KEYS/MODE

Automatic treble de-emphasis in spooling mode.

CH CONTR PAR/INVIV

(Nr. 051) KEYS/MODE

For stereo machines: Either both channels can be operated simultaneously with either channel control module or the channels are controlled individually. On/off key.

Default: INDIV:

REHEARSE

(Nr. 101) KEYS ONLY

Simulation of an electronic cut. Preselection key. The PLAY LED flashes in play mode when this function is active. When REC + PLAY are selected the machine switches at the right time from SYNC to INPUT, however, without activating record mode. The PLAY and REC LEDs flash. When PLAY is pressed the machines switches back to SYNC.

Precondition for REHEARSE: The corresponding channel must be switched to SYNC and READY, and the IN-OUT DEL function (044) must be ON.
Cancellation of this function: by pressing REHEARSE a second time.

3.75 IPS	(Nr. 211) KEYS MODE
7.5 IPS	(Nr. 212) KEYS MODE
15 IPS	(Nr. 213) KEYS MODE
30 IPS	(Nr. 214) KEYS MODE
3.75/7.5 IPS	(Nr. 215) KEYS MODE
7.5/15 IPS	(Nr. 216) KEYS MODE
15/30 IPS	(Nr. 217) KEYS MODE
3.75/7.5/15 IPS	(Nr. 218) KEYS MODE
7.5/15/30 IPS	(Nr. 219) KEYS MODE
3.75/7.5/15/30 IPS	(Nr. 220) KEYS MODE

Speed selection keys. It is possible to program either one key for each speed (functions 211...214), or combination keys (changeover with each key depression, functions 215...217) or "wraparound keys" (the next speed is selected whenever this key is pressed, functions 218...220).

FADER MASTER ENABLE	(Nr. 230) KEYS/MODE
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Higher ranking enabling of all FADER functions (No. 231 to 234).

FADER A	Y/N	(Nr. 231) KEYS/MODE
FADER B	Y/N	(Nr. 232) KEYS/MODE
FADER C	Y/N	(Nr. 233) KEYS/MODE
FADER D	Y/N	(Nr. 234) KEYS/MODE

With the fader start circuit it is possible to switch the tape recorder to play by means of the fader start circuit. The FADER START mode can be prepared by a switch that interconnects contact 6 (signal SR-FADRY) with contact 1 (ground) of the parallel remote socket (FADER START READY). A voltage from 5 V to 24 V AC or DC can now be applied to contacts 11 and 12 in order to switch the machine to play mode. This setup can also be prepared with the programmable FADER key on the local keypad or the serial remote control, or with the FADER key on the parallel remote control.

There are four programming possibilities:

- FADER A:** Without the preparation key (FADER START READY). The local keypad is disabled, except for the speed keys. The FADER switch must be reactivated after the tape has unthreaded.
- FADER B:** FADER START with enable key. The enable function for FADER B, C, and D must be program assigned to a key (FADER START READY). The local keypad is also active when FADER START is enabled. The local keypad is disabled after the FADER START has been initiated; this is the default programming.

- FADER C:** Same as FADER START B, except that the local keypad is disabled when FADER START is enabled. FADER START READY.
- FADER D:** FADER START with enable key. The enable function for FADER B, C, and D must be program assigned to a key (FADER START READY); the local keypad is also active when FADER START is enabled.
- After the FADER START has been initiated, the built-in monitor speaker (but not the headphones) is muted. If a key of the local keypad is actuated in PLAY mode after the FADER START, the muting of the monitor speaker is cancelled. If FADER START is not enabled, actuation of the FADER switch does not change the operating state of the tape recorder.
- While a recording is in progress neither the FADER START nor the FADER switch have any influence on the tape deck.

VARISPEED %	(Nr. 241) KEYS/MODE
VARISPEED HT	(Nr. 242) KEYS/MODE
VARISPEED IPS	(Nr. 243) KEYS/MODE
VARISPEED IPS/HT %	(Nr. 244) KEYS/MODE

Keys for defining the VARISPEED display format. The deviation from the nominal speed is indicated in percent, in semitones, or in ips. For each desired format a separate key (functions 241...243) or a "wraparound key" (the next function is selected with each key depression, function 244) can be programmed.

VARISPEED IND. ENH. Y/N	(Nr. 245) KEYS/MODE
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If selected, this on/off function causes the spooling keys < and > to flash in VARISPEED mode in addition to the VARISPEED LED.

SAVE KEY SETTING Y/N	(Nr. 246) KEYS/MODE
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When the machine is converted (e.g. from mono to 2-channel) the machine type must be changed over in the TYPE SETTING position of the ALIGNMENT DECK block. In this case the keypad programming is automatically adapted when function No. 246 is switched off (=NO). If the custom programming of the keypad is to be protected, this function is to be switched to YES.

Programm DISABLE A/B

(Nr. 247) KEYS/MODE

With this function the program lock [28] can be programmed in two different ways:

- Program lock A: all functions are protected against inadvertent modification.
- Program lock B: reprogramming is disabled but the first three tape deck parameters (lib. wind, max. wind, rollback, time) can still be modified.

SHUTTLE A/B

(Nr. 251) KEYS/MODE

Selection key. When SHUTTLE A is selected, the tape contacts the head when it is moved with the SHUTTLE wheel so that the modulation becomes audible. If SHUTTLE B is selected the tape does not make contact with the soundhead. Default: SHUTTLE A.

CAPSTAN MODE A/B

(Nr. 252) KEYS/MODE

Selection key. If CAPSTAN MODE A is selected the capstan motor rotates only if the pinch rollers are engaged (prolongs the bearing life). If CAPSTAN MODE B is selected the capstan motor rotates continuously except when no tape is threaded or the tape is not tensioned (shortens the acceleration time).

Default: CAPSTAN MODE A.

REC INDIC MODE A/B

(Nr. 255) KEYS/MODE

Changeover of the REC indication mode.

- REC INDIC MODE A; the red LED of the tape deck is dark when REC + PLAY are pressed (all rec preselection keys on save). Default setting.
- REC INDIC MODE B; the REC LED of the tape transport is light when REC+PLAY are pressed, even though REC preselection is on save. Mode B is required in conjunction with the Studer TLS 4000 synchronizer.

REWIND (<)

(Nr. 301) KEYS ONLY

Rewind with maximum (programmed) spooling speed.

This function can be selected from: FORWARD, STOP, PLAY/REC, SHUTTLE stored, any LOC function, CUE.

Cancellation: by pressing FORWARD, STOP, PLAY, SHUTTLE, SHUTTLE BAR, any LOC function; in synchronizer mode by pressing LOCK.

The spooling speed can be defined in the ALIGNMENT DECK block; default: 15 m/s.

FORWARD (>)

(Nr. 302) KEYS ONLY

Fast forward with maximum (programmed) spooling speed. Activation/cancellation conditions: same as REWIND.

ONLY

LIBRARY WIND

(Nr. 303) KEYS

In conjunction with FORWARD or REWIND, the preselection of this function causes the tape to be wound with defined, reduced, speed (programmable from 0.1 to 15 m/s in increments of 0.1 m/s).

Cancellation: press LIBRARY WIND key a second time.

The reduced spooling speed can be defined in the ALIGNMENT DECK block; default: 5 m/s.

PLAY

(Nr. 304) KEYS ONLY

Playback with the selected tape speed.

Cancellation: by pressing REC/PLAY, FORWARD, REWIND, STOP, any LOC function. If the shuttle wheel is actuated in play mode, the selected spooling speed and direction are accepted immediately, however the PLAY function is saved (play LED flashes) and playback resumes as soon as the shuttle wheel is released.

STOP

(Nr. 306) KEYS ONLY

All tape deck commands are cancelled by this function.

RECORD A

(Nr. 307) KEYS ONLY

Record mode, only possible in conjunction with PLAY.

Activation: simultaneously press REC and PLAY.

Cancellation: by forward, rewind, stop, all locate functions, tape dump, rollback, backspace, speed change; dropout is also possible by pressing PLAY (machine changes to play mode without interruption).

The RECORD LED is disabled when:

- MASTER SAFE is switched on,
- No RF driver is installed,
- If on machines with VU-meters none of the channels is switched to READY.

Default programming.

RECORD B

(Nr. 308) KEYS ONLY

Record mode, only possible in conjunction with PLAY; analogous to RECORD A. Difference: If the recorder operates in play mode, record mode can be activated by pressing only the REC key.

TRANSFER

(Nr. 311) KEYS ONLY

Saves the current tape timer address in a buffer. When one of the keys LOC1...LOC5 is pressed, the buffered address is transferred to the corresponding LOC memory.

Activation of this function: possible at any time.

Cancellation: by pressing TRANSFER a second time.

HOLD

(Nr. 312) KEYS ONLY

"Freezes" the current tape timer reading in any operating state (also functions when the tape timer is switched to LAP mode). The frozen timer reading can be transferred to one of the LOC memories:

- Either by pressing one of the keys LOC1...LOC5. The tape timer continues to run. When the corresponding LOC key is pressed again, the tape will be positioned at the stored address.
- By pressing TRANS and one of the keys LOC1...LOC5. The tape timer display remains "frozen". The timer is reenabled by pressing the same LOC key a second time, and the search is started by pressing the LOC key a third time.

LOC1

(Nr. 313) KEYS ONLY

LOC2

(Nr. 314) KEYS ONLY

LOC3

(Nr. 315) KEYS ONLY

LOC4

(Nr. 316) KEYS ONLY

LOC5

(Nr. 317) KEYS ONLY

Automatic searching of the stored address in spooling mode; preselection of PLAY or PLAY + REC is possible (the keys of the preselected function flash while the LOC process is still active). ROLLBACK can be preselected during the LOC process. The tape is locked at the selected address minus the preroll time. During the locking operation the programmed rollback time is added each time the ROLLBACK key is pressed.

Indication of the target address: in STOP mode by simultaneously pressing STOP and the corresponding LOC key; while the LOC process is running: by continuously holding down the corresponding LOC key.

If the LIBR WIND function is active, the locking point is searched with reduced spooling speed.

All LOC addresses remain stored when the tape recorder is switched off!
 Activation: from PLAY/REC, REWIND, FORWARD, LOC, SHUTTLE mode.
 Cancellation: by pressing STOP, LOC, REWIND, FORWARD, SHUTTLE, SHUTTLE BAR, TAPE DUMP.

LOC ZERO	(Nr. 318) KEYS ONLY
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Automatic search of the address 0.00.00.0 in spooling mode; preselection of PLAY, PLAY + REC or ROLLBACK is possible.
 Activation/cancellation: see LOC1...LOC5.

LOC START-PLAY	(Nr. 319) KEYS ONLY
LOC START-STOP	(Nr. 320) KEYS ONLY
LOC START-REC	(Nr. 321) KEYS ONLY

Analogous to LOC1...LOC5. The LOC START address is stored automatically whenever a PLAY or PLAY+REC command is entered.

Depending on the programming, PLAY, STOP or RECORD is automatically initiated when the target address is reached.

Activation/cancellation: see LOC1...LOC5.

ROLLBACK-PLAY	(Nr. 322) KEYS ONLY
ROLLBACK-STOP	(Nr. 323) KEYS ONLY
ROLLBACK-REC	(Nr. 324) KEYS ONLY

The tape recorder spools automatically backward by a preselectable amount. ROLLBACK always relates to the current tape timer reading.

When the target address is reached, the PLAY, STOP or RECORD command is automatically initiated.

Activation: from STOP, PLAY, RECORD mode.

Cancellation: by pressing STOP, REWIND, FORWARD, PLAY, PLAY + REC, SHUTTLE, SHUTTLE BAR, any LOC function.

Multiple actuation of the rollback key increments the preroll time by the programmed amount.

Example: Rollback time 15 sec.
 Press rollback time 4 times
 Preroll time = 4 x 15 sec. = 1 minute.

Cancellation: By pressing STOP, REWIND, FORWARD, PLAY, PLAY+REC, SHUTTLE SHUTTLE BAR, any LOC function.

The ROLLBACK TIME can be defined in the ALIGNMENT DECK block.

BACKSPACE-STOP	(Nr. 325) KEYS ONLY
----------------	---------------------

This function initiates rewinding at four times the play speed for as long as this key is pressed. During this process the tape contacts the reproduce head. When this key is released the tape is automatically decelerated and STOP is activated.

TAPE DUMP A TAPE DUMP B	(Nr. 327) KEYS ONLY (Nr. 328) KEYS ONLY
----------------------------	--

Dump edit mode. The take-up motor is disabled. The tape timer is active and the required information is supplied by the capstan motor tachometer (TAPE DUMP A), or the timer is disabled (TAPE DUMP B).

Activation: only possible in STOP or EDIT mode.

If tape dump is pressed while another tape transport function is active, the machine switches to STOP mode.

Cancellation: by pressing TAPE DUMP a second time or any tape transport function.

TAPE DUMP C TAPE DUMP D	(Nr. 329) KEYS ONLY (Nr. 330) KEYS ONLY
----------------------------	--

Dump edit mode with preparation, take-up motor disabled. The tape timer is active and the required information is supplied by the capstan motor tachometer (TAPE DUMP C), or the timer is disabled (TAPE DUMP D).

Activation: only possible in STOP or EDIT mode. Preparation by means of TAPE DUMP, start of the dump edit mode with PLAY, interruption with STOP.

Cancellation: by pressing TAPE DUMP a second time (only possible on STOP condition).

The spooling functions < and > can also be initiated after the tape dump key has been pressed.

LIFTER	(Nr. 332) KEYS ONLY
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In spooling mode, this function causes the tape lift pin to be retracted so that the tape contacts the reproduce head and the modulation becomes audible. Momentary-action key. If AUTO MUTE is selected, muting will be defeated for as long as the tape makes contact with the head.

Activation: in REWIND, FORWARD, LOC AND ROLLBACK mode.

Cancellation: by releasing the LIFTER key.

LAP/WATCH DISPLAY	(Nr. 334) KEYS ONLY
-------------------	---------------------

Changeover of the tape timer display to a second timer which, like the main tape timer, is supplied with pulses from the tachometer roller. When LAP/WATCH is active, an "L" is shown in the first position of the tape timer display.

This timer can be set to zero by pressing the RESET TIMER key. In LAP/WATCH mode, LOC ZERO relates to the zero position of the LAP/WATCH timer.

LOC addresses can also be entered directly in LAP mode, however, the LOC addresses of the tape timer will be overwritten.

Cancellation: by pressing LAP/WATCH a second time.

RESET TIMER

(Nr. 335) KEYS ONLY

Key for resetting the tape timer indication or the LAP/WATCH timer indication. Only the timer reading shown on the display is set to zero. If this key is continuously pressed, the corresponding timer remains at zero until the key is released.

SET TIMER

(Nr. 336) KEYS ONLY

When this key is pressed, the current tape timer content (or the content of the second timer, see LAP/WATCH function 334) is transferred into a buffer. The display position can be selected with the CURSOR keys (h, min. s, 1/10s) and the value increased or decreased as desired with the UP and DOWN keys. The modified reading can be transferred into the tape timer by pressing the STORE key.

Cancellation: by pressing SET TIMER a second time or by pressing SET ADDR, SET VARISP, or VARISPEED.

SET ADDRESS

(Nr. 337) KEYS ONLY

Setting the locator addresses:

- When this key is pressed, the momentary tape timer reading (or the reading of the second timer, see LAP/WATCH DISPLAY, function 334) is transferred into a buffer. The display position can be accessed with the CURSOR keys (h, min. s, 1/10s) and the value increased or decreased as desired with the UP and DOWN keys. The entered address can be transferred into a LOC register by pressing the TRANSFER key and one of the LOC keys. When the store operation is completed, the content of the tape timer is again displayed.
- It is also possible to transfer a locator address into the tape timer display by pressing SET ADDRESS followed by STOP and one of the LOC keys. It can then be modified as described above and stored again with TRANS and one of the LOC keys.

Cancellation (only if the store operation has not been completed): by pressing SET ADDRESS a second time or by selecting a LOC or ROLLBACK function, SET TIMER, SET VARISPEED.

SET VARISPEED

(Nr. 338) KEYS ONLY

Varispeed input. Switches the LC display to VARISPEED indication. The deviation from the nominal speed is displayed in the programmed format, the displayed value can be modified with the UP and DOWN keys. The format is defined with the VARISPEED DISPLAY FORMAT functions 241...244.

SET VARISPEED is not feasible during audio calibration (because the UP and DOWN keys are used for the calibration).

Cancellation: by pressing the SET VARISPEED key a second time or with SET TIMER.

VARISPEED ON/OFF

(Nr. 339) KEYS ONLY

Activates the variable tape speed. The selected value is shown on the LC display. As soon as varispeed is active, the VARISPEED pilot lamp flashes. If SET VARISPEED is also selected, the tape speed can be varied with UP or DOWN also in play mode. VARISPEED ON/OFF is not possible during the calibration process. Cancellation: by pressing the VARISPEED key a second time.

REMOTE A REM CTL ONLY

(Nr. 345) KEYS ONLY

Activates the parallel and/or serial remote control; the local keypad is disabled. Activation: only in STOP mode.

REMOTE B REM + LOCAL

(Nr. 346) KEYS ONLY

Activates the parallel and/or serial remote control; the local keypad remains enabled. Activation: only in STOP mode. Default programming.

SHUTTLE BAR

(Nr. 347) KEYS ONLY

Key for storing a SHUTTLE spooling speed selected with the SHUTTLE wheel. Activation: during the actuation of the SHUTTLE wheel. Cancellation: by all tape transport functions, LOC and ROLLBACK functions, backspace, and tape dump.

NO FUNCTION

(Nr. 351) KEYS ONLY

"Function" for programming a dummy key without function.

24 FRAMES/SEC
25 FRAMES/SEC
29.97 FRAMES/SEC
30 FRAMES/SEC
25/29.97FRAMES/SEC
29.97/30 FRAMES/SEC
24/25/29.97/30 F/SEC

(Nr. 401) KEYS/MODE
(Nr. 402) KEYS/MODE
(Nr. 403) KEYS/MODE
(Nr. 404) KEYS/MODE
(Nr. 405) KEYS/MODE
(Nr. 406) KEYS/MODE
(Nr. 407) KEYS/MODE

Changeover of the time code standard (only for TC versions). It is possible to program either one key for each utilized standard (functions 401...404), or a combination key (changeover with each key depression, functions 406, 407), or a "wraparound" key (advances one step each time the key is pressed, function 408).

OFFSET 1.2" Y/N

(Nr. 409) KEYS/MODE

On/off key for adapting the internal time code offset to a different standard (only for TC versions).
Normal condition: no offset, i.e. OFFSET 1.2" = N.

TC MODE NORM/SPEC

(Nr. 410) KEYS/MODE

Changeover of the TIME CODE MODE

- NORM: At 3.75 ips no TC recording is possible, the output selector is set to INPUT and REC preselection is switched to SAVE. Input and save remain fixed in this position. If the speed is changed (e.g. to 7.5 ips), the output selector changes from input back to repro, REC preselection remains in save but is no longer inhibited.
- SPEC: Time code recording is also possible at 3.75 ips. The output selector and REC preselection are not changed.



2.6.4 Programming Examples

Example 1:

Setting the audio parameters: reproduce level, tape speed 7.5 ips, CCIR equalization, tape type A, channel 2:

	Step	Information on LC display
	Turn the programming lock [28] counterclockwise by 1 to 2 turns (hexagon-socket screw key No. 2.5)	
	Switch machine to STOP	L RANGE ../.. dBm
①	v/NEXT	USER SET UP ALIGNMENT MODE
②	v/NEXT	ALIGNMENT AUDIO DECK AUX
⑤	v/NEXT	LINE OUT CALIBRATION AUDIO CHANNELS INPUT
	v/NEXT	LVL REP 15.0 CCIR A CH1 72 CH2 72
	Press the speed selection key 7.5 ips	LVL REP 7.50 CCIR A CH1 <u>66</u> CH2 66
	>/CURSOR (changeover to CH 2)	LVL REP 7.50 CCIR A CH1 66 CH2 <u>66</u>
	Set the desired level with the UP/DOWN key (indication in HEX)	LVL REP 7.50 CCIR A CH1 66 CH2 <u>F9</u>
	Save the setting with STORE; press LAST 4 times proceed to the next setting with NEXT.	L RANGE ../.. dBm or: TRB REP 7.50 CCIR A CH1 39 CH2 <u>39</u>

Example 2:

Activating the functions AUTO MUTE (function No. 041) without assigning this function to a key:

	Step	Information on the LC display
	Turn the programming lock [28] counterclockwise by 1 to 2 turns (hexagon-socket screw key No. 2.5)	
	Switch the machine to STOP	L RANGE ../.. dBm
①	v/NEXT	USER SET UP ALIGN <u>M</u> ENT MODE
③	v/CURSOR	USER SET UP ALIGNMENT <u>M</u> ODE
④	v/NEXT	KEY / MODE SETTING <u>A</u> UDIO DECK TC
⑧	v/NEXT	AUDIO KEYS/ <u>M</u> ODE KEYS ONLY
⑭	v/NEXT	F009 1/0 NO KEY L RANGE 0/6dBm Y/N
	Page to the function with the UP key	041 0/1 NO KEY AUTO MUTE ON/OFF
	Changeover with STORE	F041 1/0 NO KEY AUTO MUTE ON/OFF
	Press LAST 4 times	L RANGE ../.. dBm

Example 3:

Reprogramming the FADER START key (key 2.4, function No. 232) to the function AUTO MUTE ON/OFF (function No. 041):

	Step	Information on LC display
	Turn the programming lock [28] counterclockwise by 1 to 2 turns (hexagon-socket screw key No. 2.5)	
	Switch machine to STOP	L RANGE ../.. dBm
①	v/NEXT	USER SET UP ALIGNMENT <u>MODE</u>
③	>/CURSOR	USER SET UP ALIGNMENT <u>MODE</u>
④	v/NEXT	KEY / MODE SETTING <u>AUDIO</u> DECK TC
⑧	v/NEXT	AUDIO KEYS/ <u>MODE</u> KEYS ONLY
⑭	v/NEXT	F009 1/0 NO KEY L RANGE 0/6 dBm Y/N
	Page to the function with the UP key	F041 0/1 NO KEY AUTO MUTE ON/OFF
	Press STORE	F041 PRESS 2nd KEY AUTO MUTE ON/OFF
	While holding STORE down also press FADER START	F41 key assigned AUTO MUTE ON/OFF drücken
	Change the key label	
	Press ^ 4 times	L RANGE ../.. dBm

Example 4:

Reprogramming the RESET TIMER key (key 4.1, function No. 335) to the function SET ADDRESS (function No. 337):

	Step	Information on LC display
	Turn the programming lock [28] counterclockwise by 1 to 2 turns (hexagon-socket screw key No. 2.5)	
	Switch the machine to STOP	L RANGE ../.. dBm
①	v/NEXT	USER SET UP ALIGNMENT <u>M</u> ODE
③	>/CURSOR	USER SET UP ALIGNMENT <u>M</u> ODE
④	v/NEXT	KEY / MODE SETTING AUDIO <u>D</u> ECK TC
⑨	>/CURSOR	KEY / MODE SETTING AUDIO <u>D</u> ECK TC
⑩	v/NEXT	TAPE DECK KEYS/MODE KEYS ONLY
⑱	>/CURSOR	TAPE DECK KEYS/MODE KEYS ONLY
⑲	v/NEXT	F301L07, R27 REWIND
	Page to the function with the UP key	F337 NO KEY SET ADDRESS
	Press STORE	F337 PRESS 2nd KEY SET ADDRESS
	While holding STORE down, also press RESET TIMER	F337 key assigned SET ADDRESS
	Change the key label	
	Press ^ 4 times	L RANGE ../.. dBm

* L07, R27 means: this function is assigned to key No. 0.7 of the local keyboard (local, "L"), and to the key No. 2.7 of the serial remote control (remote, "R").

2.7 Degraded Operation

This Section describes the capabilities of the A812 tape recorder in the event of a fault within an individual module.

"Degraded operation" is not possible if:

- one or more supply voltages are missing

or:

- the spooling motor and capstan motor control is defective.

Important !! If any error messages are displayed, the machine should always be switched off for approximately 10 seconds and then powered on again. If the same error messages reoccurs, one of the remedies described in 2.7.1 will have to be taken. If any faults occur, the tape recorder should be operated only if absolutely necessary and be repaired or forwarded to the nearest service center as soon as possible.

2.7.1 Error Messages of the LC Display

There are three error categories:

- Errors of the category 1 are faults that make it impossible to operate the equipment (e.g. hardware malfunctions). Such an error message can only be reset by switching the machine off and switching it on again after approx. 10 seconds. If the error reappears, it must be remedied, else the tape recorder can be operated as usual.
- Errors of the category 2 adversely affect the operation of the machine, however degraded operation is still possible. Error messages of this category remain on the display for information purposes even if the cause of the malfunction has disappeared. The error message can be cancelled by pressing the STORE key. If the malfunction persists, the message will reappear and can be cancelled again (if necessary), as described above. The machine can still be operated.
- Errors of the category 3 also influence the function of the machine, but degraded operation is possible. The error message is automatically cancelled when the cause of the error disappears. If the LC display is needed for other purposes (e.g. varispeed indication), the error message can be cancelled by pressing STORE even though the error may possibly persist.

Error messages of the category 1:

ERR.	SUPPLY VOLTAGE
------	-------------------

- Recorder:** ■ switches to STOP, does not respond to keys
- Cause:** ■ One (or several) supply voltages are missing.

- Remedy:**
- Switch off the tape recorder
 - Check the secondary fuses and replace them, if necessary.
 - Repair or replace the SWITCHING STABILIZER PCB.

ERR.	DATA LOST
------	--------------

- CAUSE:**
- Audio and reference data lost.

- REMEDY:**
- Switch the recorder off and on again. The standard parameters are now loaded and the error message disappears.
 - Check the buffer battery on the MASTER MPU, replace it, if necessary (see 2.7.3).
 - Continue to operate with the standard data (minor deviations from the optimum frequency response are unavoidable), or
 - Load the parameters stored on tape or diskette via the RS 232 interface, or
 - Load the parameters noted in the log book, or
 - Recalibrate the machine.

ERR.	EPROM 1
------	---------

ERR.	EPROM 2
------	---------

ERR.	EPROM 3
------	---------

- CAUSE:**
- Fault in one of the three EPROMs on the MASTER MPU.

- REMEDY:**
- Switch the tape recorder off and on. If this message does not reappear, continue to work with the machine.
 - Replace the software

ERR.	MOVE-SENSOR HARDWARE
------	-------------------------

- MACHINE:**
- Switches to STOP.

- CAUSE:**
- MOVE SENSOR PCB defective or too frequent direction changes detected.

- REMEDY:**
- Exchange, repair, or realign.

**Error messages of
the category 2:**

ERR.	POWER DROP OUT
------	-------------------

MACHINE: ■ Switches to STOP.

CAUSE: ■ Transient line voltage failure 100 ms

REMEDY: ■ Acknowledge with STORE.

ERR.	AUDIO CHANNEL 1
------	--------------------

ERR.	AUDIO CHANNEL 2
------	--------------------

CAUSE: ■ Error in one of the audio channels, HF driver defective, erase current too high because wrong erase head installed. Playback with the affected channel is still possible !!

REMEDY: ■ Exchange the audio modules (machine disconnected from AC power source!).
■ Check the erase head.

**Error messages of
the category 3:**

ERR.	MOTOR SUPPLY VOLTAGE LOW
------	-----------------------------

CAUSE: ■ Spooling motor supply voltage failure

REMEDY: ■ Wait 10 seconds. If the error persists:
■ Switch the tape recorder off.
■ Check both primary fuses and replace them, if necessary.
■ Repair or replace the SPOOLING MOTOR SUPPLY or SPOOLING MOTOR DRIVE AMPLIFIER.

ERR.	NO COMMUNICAT. MASTER-TAPE DECK
------	------------------------------------

- CAUSE:**
- No feedback to status request.
 - Software of the MASTER MPU and TAPE DECK MPU not compatible.

- REMEDY:**
- Replace the MASTER SERIAL INTERFACE and/or the TAPE DECK SERIAL INTERFACE.
 - Replace the software.

ERR:	TACHO SENSOR
------	-----------------

- MACHINE:**
- Switches to STOP

- CAUSE:**
- No output signal from the move sensors, the direction of rotation does not agree.

- REMEDY:**
- Check the flat cable connectors to the sensor.
 - Check the sensor and replace it, if necessary
 - Check that the spindles and the tacho roller rotate without binding.

ERR:	NO COMMUNICAT CAPSTAN-TAPE DECK
------	------------------------------------

- MACHINE:**
- Switches to STOP.

- CAUSE:**
- No data exchange via the parallel port of the CAPSTAN INTERFACE.
 - Capstan processor does not start.

- REMEDY:**
- Replace the CAPSTAN INTERFACE or the CAPSTAN CONTROL UNIT.

ERR:	SHUTTLE VALUE INVALID
------	--------------------------

- CAUSE:**
- Incorrect values have been supplied by the SHUTTLE potentiometers during the initialization phase.

- REMEDY:**
- The SHUTTLE wheel should not be actuated during the initialization phase of the machine.
 - Readjust the SHUTTLE potentiometer.

ERR:	NOT IDENTIFIED
------	-------------------

CAUSE: ■ Unknown fault.

REMEDY: ■ Switch the recorder off and on again. The machine can be used normally if the error message does not reappear.
 ■ Unplug and reinsert the RAM of the MASTER MPU.

Important !! ■ The audio data and the tape tension data are lost and the default parameters are loaded in their place!
 ■ Either continue to operate with the default data (minor deviations from the optimum frequency response are unavoidable), or
 ■ Load the parameters stored on tape or diskette via the RS 232 interface, or
 ■ Load the parameters specified in the log book, or
 ■ Recalibrate the machine.

THE FOREGOING LIST IS NOT COMPLETE AND CAN BE CHANGED OR EXPANDED AS REQUIRED.
--

2.7.2 Additional Messages on the LC Display

After the tape recorder has been converted (e.g. from full-track mono to 2-track), the machine type must be changed in the parameter block TYPE SETTING". The key programming will automatically be adapted. The display shows:

WARN:	DEFAULT KEYS LOADED
-------	------------------------

If the keyboard programming should be retained, activate the function No. 246 "SAVE KEY SETTING".

After a loss of data (message: "ERR: DATA LOST", see above) and the subsequent off/on-switching of the machine, the following message is displayed:

WARN:	DEFAULT KEYS & PARAMETER LOADED
-------	------------------------------------

The machine can be operated with the default parameters or it must be recalibrated, as described above.

WARN:	DEFAULT PARAMETER LOADED
-------	-----------------------------

After one of the key function has been reprogrammed, the above message changes as follows:

WARN:	DEFAULT KEYS LOADED
-------	------------------------

2.7.3 Procedure for Handling the Error Message DATA LOST

- Follow the instructions according to the Section (ERR: DATA LOST), 2.7.2.
- Replace the battery on the MP UNIT MASTER 1.811.786.

Early failure of the lithium battery type SONNENSCHN (size 1/2 AA, diam. 14.3 mm x 25.7 mm, part No. 89.01.0275) is possible due to manufacturing defects. The life of such batteries is limited to approx. 2 years.

In the event of a battery failure, the tape recorder loses the audio and tape deck parameters (error message: DATA LOST) and continues to operate with the default values. The batteries affected by this defect are marked with the production date 84 02 to 84 29 (embossed at the edge near the negative pole).

For safety reasons we recommend to replace all batteries marked with the production date 84 xx (worldwide approx. 300 units). Affected are the tape recorders A812 and A820 that have been delivered prior to the end of 1986.

Exchanging the buffer battery

of the A812 and A820:

- Write down the audio and tape deck parameters (including tape tensions A/B, equalization data and TYPE SETTING in the ALIGNMENT DECK block) or save them via the RS 232 interface on tape or a personal computer.
- Replace the battery and label it with the date on which it should be replaced (= production date + 7 years).
- Switch on the tape recorder. After a short time the error message DATA LOST may appear on the LC display. If this is the case, press the RESET key on the MPU MASTER. The processor will be reinitialized and the tape recorder is ready.
- Reenter or load the audio and tape deck parameters, incl. TYPE SETTING, see Section 2.7.4.
- Check the programming of the keyboard and reprogram any key so that the error message DEFAULT KEYS LOADED will be cleared.

Packing and transportation of the MPU boards

in black, antistatic plastic bags.

To prevent discharge of the battery, the battery terminals should not touch the antistatic plastic foil. As an insulator, a piece of pasteboard, format approx. 100 x 130 mm, is placed between the board and the plastic foil.

Ordering replacement batteries

Please contact the nearest STUDER dealer.

Technical data of the new batteries:

- Open-circuit voltage: 3.66 V
- Nominal voltage (loaded with 3.4 k Ω , measured after 2 - 3 minutes): 3.4 V
- The maximum current consumption of the RAM is 13 μ A, the corresponding voltage drop across diode D3 on the MPU MASTER board should be less than 300 mV.

2.7.4 Programming the machine type (TYPE SETTING)

The machine type (e.g. A812-0.75, A812-2 VU, etc.) is set with the TYPE SETTING function in the ALIGNMENT DECK parameter block. This is necessary for selecting the correct default programming as well as the erase current of the HF driver (also refer to Section 2.5).

An incorrect TYPE SETTING can damage the output stage of the HF DRIVER.

Step	Information on LC display
Turn the programming lock [28] counterclockwise by 1 to 2 turns (hexagon-socket screw key No. 2.5)	
Switch machine to STOP	L RANGE ./. dBm
v/NEXT ALIGNMENT MODE	USER SET UP
v/NEXT AUDIO DECK AUX	ALIGNMENT
>/CURSOR AUDIO DECK AUX	ALIGNMENT
Press v/NEXT 11 times until the LC display shows:	TYPE SETTING TYPE: A812-0.75
Select the desired type with the UP/DOWN keys	TYPE SETTING TYPE: A812-xxxx
Save the setting with STORE	
Press ^/LAST 13 times	

Machine version	Erase head	Type setting
A812-0.75	Full-track	A812-0.75
A812-0.75 VU	Overlapping e.	A812-0.75 VU
A812-1	Full-track	A812-1
A812-1	VU Full-track	A812-1 VU
A812-2/2	Overlapping e.	A812-2/2
A812-2/2	VU Overlapping e.	A812-2/2 VU
A812-2F	Full-track	A812-2 (F)
A812-2	2-Track (no TC erasure)	A812-2 (F)
A812-2 VU	2-Track (no TC erasure)	A812-2 VU
A812-2 TC	2-Track (with TC erasure)	A812-2 TC
A812-2 TC VU	2-Track (with TC erasure)	A812-2 TC VU

Parameter table for TYPE SETTING

2.8 Operation with the Serial Interface

Two versions of the serial interface are available:

The version 1.810.751 supports the operation with a terminal (RS 232, ASCII format), and the audio parameters can be saved on an external medium such as tape.

The version 1.820.751 supports the operation with a terminal (RS 232, binary format). In addition it is suited for connection to an SMPTE/EBU bus in accordance with the SMPTE standard.

2.8.1 SMPTE/EBU Bus

The SMPTE/EBU bus is a data transfer medium with which several individual units can be combined into a flexible and powerful system (e.g. remote control of several tape recorders).

2.8.2 Data Dump

The audio parameters stored in RAM can be copied to audio tape or cassette via the 9-pin connector of the serial interface 1.810.751, or new audio parameters can be read into the machine from an external storage medium (refer to Section 4.8).

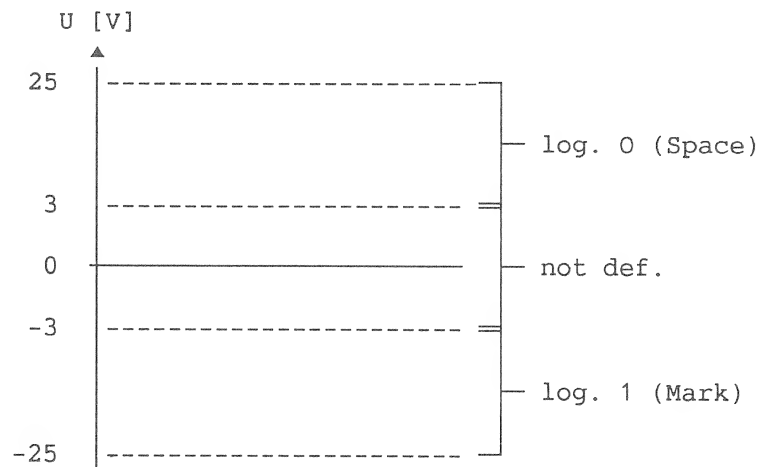
2.8.3 RS 232 Interface

The term "RS 232" defines a connection between a terminal and a modem. This standard also defines:

- Electrical characteristics (levels, lines),
- Mechanical characteristics (connectors),
- Signal descriptions, and
- Standard connections.

The interface supports data rates up to 19.2 kbaud (for A810 / A812 / A820: 9.6 kbaud) and cable lengths up to 15 m.

The signal levels are defined as follows:



Various interface structures are possible with the 25-pin connector. In practice, however, the full complement of pins is rarely used. Modern systems frequently use the minimum structures illustrated in Fig. 2.8.1 for establishing terminal-modem or terminal-terminal connections.

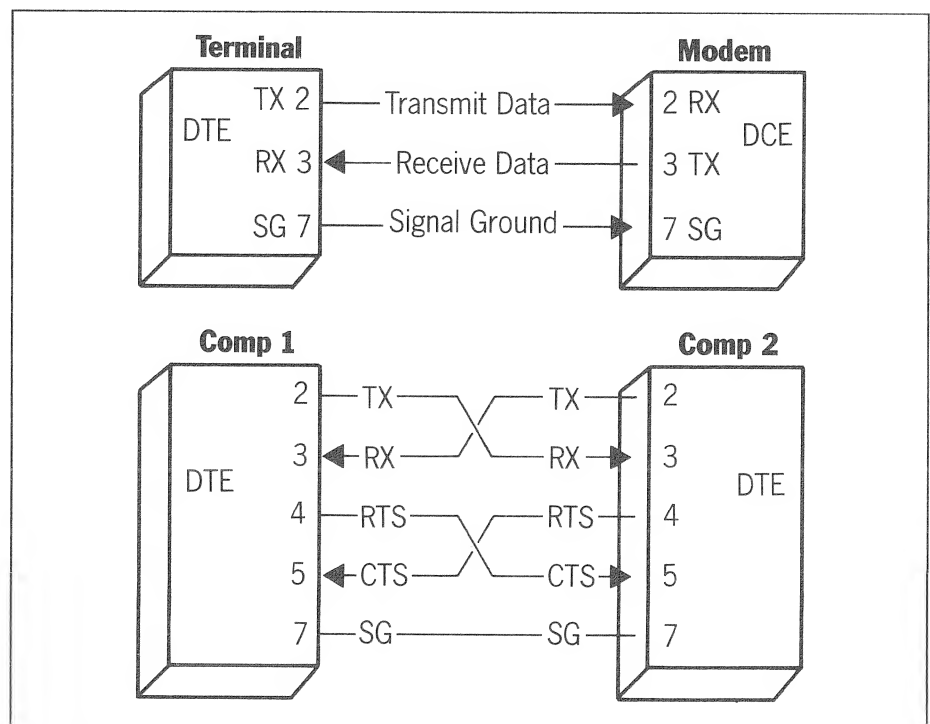


Fig. 2.8.1

All extensions (e.g. baud rate, code, synchronous/asynchronous connection, number of start/stop bits, parity, hardware/software handshake) are defined by the equipment manufacturer.

2.8.4 Serial ASCII Interface of the A812 1.810.751.00

The serial interface of the A812 tape recorder employs a 9-pin connector according to SMPTE rather than the 25-pin connector. By means of an adapter cable the user can thus define whether the unit is to function as a terminal or as a modem.

Recorder 9-Pole		Terminal 25-Pole		Modem 25-Pole	
Signal	Pin	Signal	Pin	Signal	Pin
SNDATA	2	Trans.Data	2	Trans.Data	3
RCVDATA	8	REC. DATA	3	REC. DATA	2
GROUND	9	Sig.Ground	7	Sig.Ground	7

No additional handshake lines are used. A software handshake (X ON/ X OFF protocol) is implemented for all baud rates, but only necessary at 9.6 kbaud.

X ON = 0001 0001 (ASCII DC1) continue X OFF = 0001 0011 (ASCII DC3) interrupt
--

After an X OFF has been received, the tape recorder still transmits up to two characters. After it has transmitted its own X OFF, it can still receive five characters without losing a command.
The number of start and stop bits, even/odd/no parity, and the following baud rates can be set: 300, 1200 or 9600.
Only ASCII characters are accepted as data.

2.8.5 Installation of the Serial Interface 1.810.751

- Set up your computer or terminal as follows: 1 start bit, 8 data bits, 1 stop bit (no parity), baud rate 300, 1200, or 9600. No echo mode. Set the handshake lines CTS and RTS to LOW.
- SERIAL REMOTE CONTROLLER 1.810.751: This board contains a receiver and a driver for the Studer interface for recording data on audio tape, and the RS 232 interface. Changeover between these two is possible manually by means of a jumper (position X; changeover with DIL switch 2, OFF = RS 232) or automatically (position H). Since the automatic changeover is implemented, position H should be used.
Insert the PCB, enable the pilot LED with the DIL switch 1: the RX and TX LEDs light up.
- Connect the computer or the terminal via the adapter cable to one of the two 9-pin RS 232 sockets. If the connection is correct, the RX and the TX LEDs switch off.
- Program the baud rate to match the computer or terminal.
After a RESET (switching the A812 MCH off and on again) the display shows:

```
***** A812 MONITOR *****  
***** ALL PROCESS STARTED *****
```

The device commands (see command list below) can now be entered via the terminal keyboard. The commands are executed when the ENTER KEY is pressed.

Command list

TAPE DECK COMMANDS		
Command (_ = blank, <J = CR, * = blank or CR)	Response of the tape recorder-	Description
(SW 6/89)		
STP*	<CR><LF>	STOP
RWD*	<CR><LF>	Rewind
FWD*	<CR><LF>	Fast forward
PLY*	<CR><LF>	Play
REC*	<CR><LF>	Record (directly, without preceding PLAY command)
LFT*	<CR><LF>	Tape lift pin extended
EDT*	<CR><LF>	Tape lift pin retracted
SSA*	<CR><LF>	Select tape speed 3.75 ips (9,5 cm/s)
SSB*	<CR><LF>	Select tape speed 7,5 ips (19 cm/s)
SSC*	<CR><LF>	Select tape speed 15 ips (38 cm/s)
SSD*	<CR><LF>	Select tape speed 30 ips (76 cm/s)
WNR_<XXXX>	<CR><LF>	Rewind with selec- table speed (0000 ≤ XXXX ≤ 5FFF)
WNF_<XXXX>	<CR><LF>	Spool forward with selectable speed (0000 ≤ XXXX ≤ 5FFF)
NS?*	3.75 IPS <CR> <LF> 7.5 IPS <CR> <LF>, or 15 IPS<CR><LF> or 30 IPS<CR><LF>	Read out the nominal speed
VEN*	<CR><LF>	Vari-Speed external on
VEF*	<CR><LF>	Vari-Speed external off

TAPE DECK COMMANDS		
FEN*	<CR><LF>	FADER START enable (higher ranking)
FEF*	<CR><LF>	FADER START inhibited (higher ranking)
LOC_<address>	<CR><LF>	Spool to <(-) hh(:)()mm(:)()ss (:)()n> (n = 1/10 seconds) e.g. LOC_01:20:15:0 LOC_-00_35_25_1
LMV_<T.reading>	<CR> <LF>	Spool according to the timer reading produced by the tachometer roller<XXXXXXXX>, 4 Bytes HEX z.B. LMV_00AE4F00
MV?*	XX XX XX XX	Read out the timer reading of the tachometer roller 4 Bytes HEX
STM_<address>	<CR><LF> <CR><LF>	Set timer to <(-)hh (:)()mm(:)()ss (:)()n> (n = 1/10 seconds) (-9:59:59:9 ≤address ≤ 23:59:59:9) z. B. STM_01_20_15_0 STM_-00:35:25:1
TM?*	_hh:mm:ss:n <CR><LF>, or _hh:mm:ss:n <CR><LF>	Read out the tape timer
DST*	n = 1/10 sec <CR><LF><_hh:m m:ss:n_Y_XXXXX XXXXXXXXXXXX> n = 1/10 Sek. Y = Status, 1 Byte HEX X = Status inquiry, e.g.. PLAY	Display the equipment status, repetitive (cancel with CTRL X)

TAPE DECK COMMANDS		
ST?*	X<CR><LF> X = 1 Byte HEX	Status inquiry e.g.:
	X = 01	TAPE OUT
	X = 81	TAPE OUT ACHIEVED
	X = 02	STOP NOT ACHIEVED
	X = 82	STOP ACHIEVED
	X = 03	REWIND NOT ACHIEVED
	X = 83	REWIND ACHIEVED
	X = 04	FORWARD NOT ACHIEVED
	X = 84	FORWARD ACHIEVED
	X = 05	PLAY NOT ACHIEVED
	X = 85	PLAY ACHIEVED
	X = 06	PLAY VARISPEED NOT ACHIEVED
	X = 86	PLAY VARISPEED ACHIEVED
	X = 07	PLAY INT. REF. NOT ACHIEVED
	X = 87	PLAY INT. REF. ACHIEVED
	X = 08	PLAY EXT. REF. NOT ACHIEVED
	X = 88	PLAY EXT. REF. ACHIEVED
	X = 89	RECORD ACHIEVED
	X = C0	SHUTTLE REVERSE ACHIEVED
	X = C1	SHUTTLE FORWARD ACHIEVED
	X = 42	LOCATE WIND REVERSE
	X = C2	LOCATE WIND REVERSE ACHIEVED
	X = 43	LOCATE WIND FORWARD
	X = C3	LOCATE WIND FORWARD ACHIEVED
	X = C7	CUEING FORWARD ACHIEVED
	X = C9	POSITION PLAY FORWARD ACHIEVED
	X = 59	TAPE DUMP
	X = D9	TAPE DUMP ACHIEVED

AUDIO-COMMANDS		
Command (_ = blank, <J = CR, * = blank or CR)	Response of the tape recorder-	Description
SMN*	<CR><LF>	Switch to mono (only if equipped with MONO/STEREO switch)
SST*	<CR><LF>	Switch to stereo (only if equipped with MONO/STEREO switch)
SNB*	<CR><LF>	NAB-equalization
SCR*	<CR><LF>	CCIR-equalization
STA*	<CR><LF>	Switch to tape type A
STB*	<CR><LF>	Switch to tape type B
MSN*	<CR><LF>	MASTER SAFE on
MSF*	<CR><LF>	MASTER SAFE off
SRH*	<CR><LF>	REHEARSAL on
CRH*	<CR><LF>	REHEARSAL off
DDN*	<CR><LF>	Drop in/out- out delay on
DDF*	<CR><LF>	Drop in/out- out delay off
REA_i<J	<CR><LF>	Channel i READY (i = 1, 2, 3 or F)
SAF_i<J	<CR><LF>	Channel i SAFE (i = 1, 2, 3 or F)
INP_i<J	<CR><LF>	Channel i INPUT (i = 1, 2, 3 or F)
SYN_i<J	<CR><LF>	Channel i SYNC (i = 1, 2, 3 or F)
REP_i<J	<CR><LF>	Channel i REPRO (i = 1,2, 3 or F)
MTN_i<J	<CR><LF>	Channel i MUTE (i = 1,2 or F)
MTF_i<J	<CR><LF>	Channel i cancel mute (i =1,2 or F) (F = all channels)
SAP_i_j_k*	<CR><LF>	D/A-converter j channel i to k (i =1 or 2; j = 0: LEVEL REPRO

AUDIO-COMMANDS		
AP?_i,j*	XX<CR><LF> XX=1 Byte HEX	1: TREBLE REPRO 2: BASS REPRO 3: EQUALIZATION REPRO 4: LEVEL RECORD 5: TREBLE RECORD 6: BIAS 7: EQUALIZATION RECORD; k = 2 digits HEX, correspond to the number that appears on the LC display in conjunction with the audio settings (e.s. SAP_1_0_FF Read out audio para- meters channel i, D/A converter j i = 1 or 2; j = 0: LEVEL REPRO 1: TREBLE REPRO 2: BASS REPRO 3: EQUALIZATION REPRO 4: LEVEL RECORD 5: TREBLE RECORD 6: BIAS 7: EQUALIZATION RECORD i=channel(1,2), j=D/A-converter xx=hex-number 0≤xx≤FF j: 0=level repro/sync 1=treble repro/sync 2=bass repro/sync 3=equalization repro/sync 4=level record 5=treble record 6=bias record 7=equalization record
PAP <i,j,xx>	[]<i,j,xx> [,CR]	

MACHINE AND TIME CODE COMMANDS		
Command (_ = blank, <J = CR, * = blank or CR)	Response of the tape recorder-	Description
TP?	TP?[,CR]	Tape tension parameter?
LCE*	<CR><LF>	built-in keypad enabled
LCD*	<CR><LF>	built-in keypad disabled
RME*	<CR><LF>	Remote control keypad enabled
RMD*	<CR><LF>	Remote control keypad disabled
TDN*	<CR><LF>	Time-Code-delay on
TDF*	<CR><LF>	Time-Code-delay off (bypassed)
TH?*	00<CR><LF>,od.	Readout time code source (00 = l.h. head;
	01<CR><LF>,od.	01 = r.h.ch. wideband
	02<CR><LF>,od.	02 = r.h.ch. narrow band
	03<CR><LF>	03 = line input
SBA_<address>	<CR><LF>	Set bus address to <XXXX> (4 HEX, 82FF ≤ digits XXXX ≤ FFFF)
BA?*	<XXXX><CR><LF>	Read out bus address

THE FOREGOING LIST IS NOT COMPLETE AND CAN BE CHANGED OR
EXPANDED AS REQUIRED.

Examples:

FWD*	=	Fast forward
LOC_-01:43:00:8	=	Autolocator to address 1.43.00.8
SAF_3<	=	TC channel SAFE (recording inhibited)
AP?_1_4*	=	Read out the audio parameters of channel 1, D/A converter 4 (LEVEL RECORD); response of the tape recorder e.g. A9 HEX
SAP_1_4_A3*	=	Modify the audio parameters channel 1, D/A converter 4 (LEVEL RECORD), new value A3 (old value A9 from the preceding example will be overwritten!)
Important !!		All other parameters such as SYNC or REPRO, tape speed, tape type, equalization must be selected on the tape recorder.
D_108_227	=	All audio and reference parameters are displayed in hexadecimal format, e.g.:

```

      0 1 2 3 4 5 6 7 8 9 A B C D E F
0100 xx xx xx xx xx xx xx xx 82 70 90 95 26 B0 30 BB ...'.....&00;
0110 00 00 00 00 00 66 39 80 87 30 A0 3E 75 62 50 96 87 .....9..0 >..P..
0120 66 39 80 61 .. .. .. ..
0130 .. .. .. ..
.....
.....

```

The address of a parameter can be computed in decimal format (and must subsequently be converted to a hexadecimal value!):

RADR = ARAM-12 + IDAC + ISYNC*8 + CCAB*12 + SPEED*24 + CHNL*72 + TAPE*144

where:

- RADR = Address of the parameter (decimal value)
- ARAM = 264 (108 hex), starting address of the parameter area in RAM

IDAC

= 0 for	LEVEL REPRO
= 1 for	TREBLE REPRO
= 2 for	BASS REPRO
= 3 for	EQUALIZATION REPRO
= 4 for	LEVEL RECORD
= 5 for	TREBLE RECORD
= 6 for	BIAS RECORD
= 7 for	EQUALIZATION RECORD

ISYNC

= 0 for	REPRO MODE
= 1 for	SYNC MODE

CCAB

= 0 for	equalization according to CCIR (at 30 ips automatically = 0)
= 1 for	equalization according to NAB (at 3.75 ips automatically = 1)

SPEED

= 0 for	9,5 cm/s (3.75 ips)
= 1 for	19 cm/s (7.5 ips)
= 2 for	38 cm/s (15 ips)
= 3 for	76 cm/s (30 ips)

CHNL

= 0 for	channel 1
= 1 for	channel 2

TAPE

= 0 for	tape type A
= 1 for	tape type B

The address of TREBLE, REPRO, SYNC, NAB, 15 ips, channel 1, tape type B is:

$$264 \cdot 12 + 1 + 1 \cdot 8 + 1 \cdot 12 + 2 \cdot 24 + 0 \cdot 72 + 1 \cdot 144 = 465 = 01D1 \text{ (hex)}$$

UAP_01D1_5C

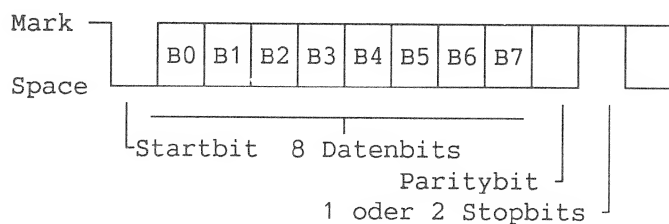
= Change the above parameters to 5C

2.8.6 Installation of the Serial Interface 1.820.751

APPLICABLE TO MODULES NO. 1.820.751.21 or higher TOGETHER WITH MASTER SOFTWARE 17/87 or higher

Hardware definitions:

- Electrical standards according to RS 232C or RS422A (selectable with jumpers)
- Full-duplex
- Asynchronous data transmission, bit-serial and word-serial, according to the following diagram:



Odd or even parity and the number of stop bits (1 or 2) can be programmed.

- Baud rates for RS 232 and RS 422 programmable as 9600 or 1200 baud, for operation in conjunction with an SMPTE bus it is preset to 38400 baud.
- Standard factory settings:

- RS 232C
- 1 start bit
 - 8 data bits
 - even parity
 - 1 stop bit
 - 9600 baud.

Pin assignment:

Pin	RS232	RS422
1	SHIELD	SHIELD
2	---	TRANSMIT A
3	RX	RECEIVE B
4	0,0 V	RECEIVE COMMON
5	---	---
6	0,0 V	TRANSMIT COMMON
7	TX	TRANSMIT B
8	---	RECEIVE A
9	SHIELD	SHIELD

Jumpers:

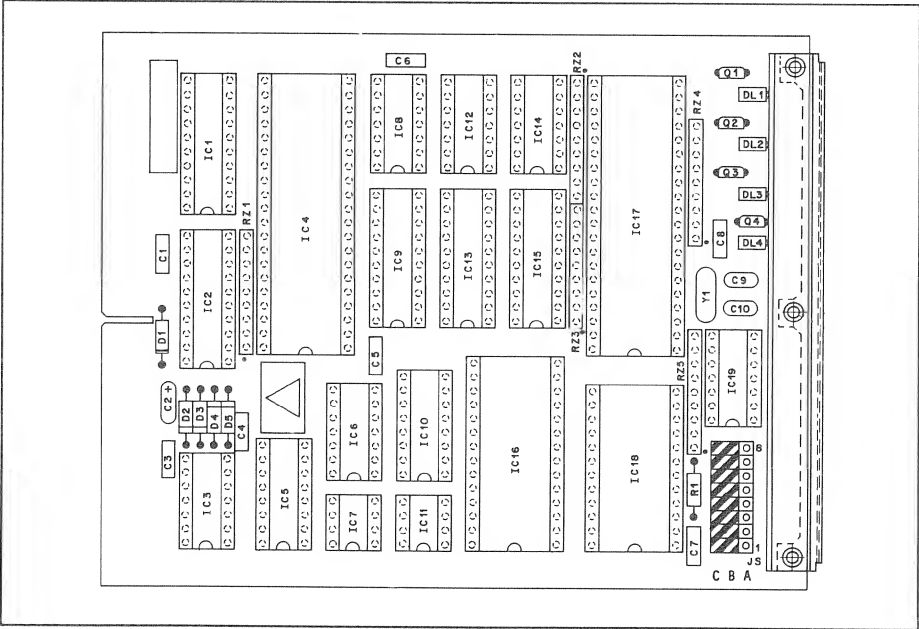


Fig. 2.8.2

Changeover of the operating mode and the electrical configuration:

	J8	J7	J6	J5	J4	J3	J2	J1
SMPTE BUS	BC	BC	BC	BC	BC		BC	BC
SERIAL RS232	AB	AB	AB	AB	AB		AB	AB
SERIAL RS422	AB	BC	BC	BC	AB		BC	BC

Changeover of the baud rates:

		J3
SMPTE BUS	38,4 kBd	BC
RS232/RS422	9600 Bd	BC
	1200 Bd	AB

Standard settings

	J8	J7	J6	J5	J4	J3	J2	J1
SMPTE BUS	BC	BC	BC	BC	BC	BC	BC	BC
SERIAL RS232 9600 Baud	AB	AB	AB	AB	AB	BC	AB	AB

Pilot lamps

The four pilot LEDs on the front bracket of the module 1.820.751 are used for indicating different states, depending on whether the module is used as a serial interface (RS 232/RS 422) or as an SMPTE/EBU bus interface (programmable with jumpers as described above).

SMPTE/EBU-Bus:	PCB	RS232/RS422:
INTERFACE SELECTED Glows when the interface receives an SEL ADDR and as long as it remains in the SELECT STATUS	○	RX ACTIVE Glows as soon as the interface receives STX (control byte) and as long as it receives a message.
INTERFACE POLLED Glows when the interface receives a POLL ADDR and as long as it remains in the POLL state.	○	TX ACTIVE Glows as long as the interface transmits a message.
INTERFACE IDLE/ACTIVE Glows as long as the interface waits for a BREAK-SIGNAL or its own address	○	INTERFACE ACTIVE Glows as long as the interface waits for STX (control byte).
FIFO TX/RX ACTIVE Glows as long as the interface receives data from the FIFO or transmits data to the FIFO	○	FIFO TX/RX ACTIVE Glows when the interface receives data from the FIFO or transmits data to the FIFO..

Software protocol:

The host control system can transmit commands (function or parameter commands) or status requests to the A812.

The A812 acknowledges the commands and supplies status messages on request.

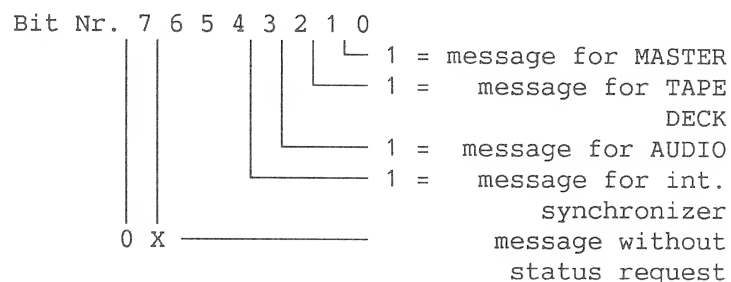
- Commands from the control system to the A820 MCH:

STX	BC	CB	CC	CPs...	CS
-----	----	----	----	--------	----

STX: aBis a control character that is transmitted as a start character (according to SMPTE recommendation: STX = 02H).

BC (byte count): contains the number of bytes that follow (excluding checksum).

CB (control byte):



CC (command code): function or parameter command; refer to corresponding instruction set.

CP (parameter bytes): only for parameter commands; if more than one parameter byte exists, the MSB is transmitted first.

CS (checksum): Two's complement of the sum of all data transmitted before the checksum, excluding STX.

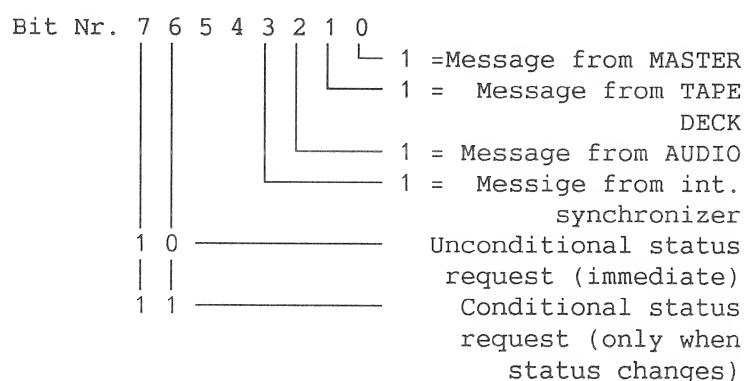
■ Status request from the control system to the A812:

STX	BC	CB	SBA	SBC...	CS
-----	----	----	-----	--------	----

STX is a control character and is transmitted as the start character (according to SMPTE recommendation: STX = 02H).

BC (byte count): = 3 (fixed).

CB (control byte):



SBA, SBC

(status request byte): SBA contains the base address, SBC the number of bytes of the requested status.

CS

(checksum): two's complement of the sum of all data transmitted before the checksum, excluding STX.

Acknowledgment and status messages of the A812 MCH to the control system:
 After the control system has transmitted a command block, it must wait for an acknowledgment from the A812 before a new command block may be transmitted. This acknowledgment can consist of a control character or a status message. If no acknowledgment arrives within the time-out period (10 ms), the control system considers the transmission as faulty. Possible acknowledgments:
 Acknowledgment after error-free transmission of commands or status change request with unchanged status:

ACK

 (= 04_H according to SMPTE-proposal)

Acknowledgment after the following errors:

- Transmission error (framing, parity overrun)
- Wrong command codes
- Time-out (2 sec) during the command transmission)

NAK

 (= 05_H according to SMPTE-proposal)

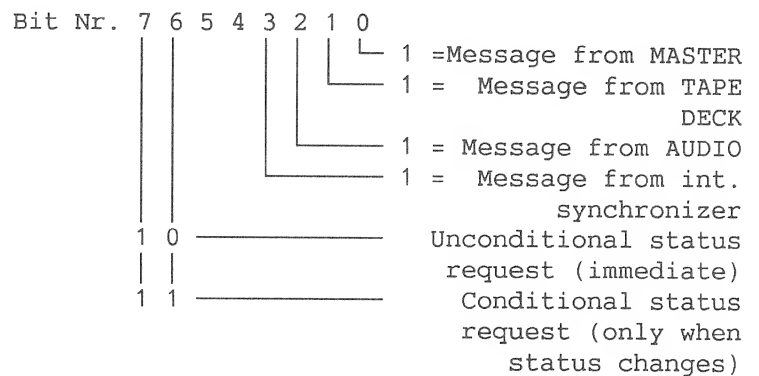
Status message as an acknowledgment to:

- Unconditional status request
- Status change request with changed status

STX	BC	CB	SBA	SBC	STATUS	CS
-----	----	----	-----	-----	--------	----

- STX** is a control character that is transmitted as the start character (according to SMPTE recommendation: STX = 02H).
- BC** (byte count): contains the number of bytes that follow (without checksum).

CB (control byte):



SBA, SBC (status request byte): SBA contains the base address, SBC the number of bytes of the requested status. STATUS: Table with the desired status bytes.

CS (checksum): two's complement of the sum of all data transmitted before the checksum, excluding STX.

Command list:

APPLICABLE TO MODULES NO. 1.820.751.21 or higher
TOGETHER WITH MASTER SOFTWARE 17/87 or higher

Tape deck commands from the control system to the A812 according to the following pattern (see also above):

STX	BC	CB	CC	CPs....	CS
-----	----	----	----	---------	----

where CB = 02H

Important !! The following commands do not correspond to the normal SMPTE convention. They have provisionally been defined in this manner and released for use. They will be changed as soon as the final SMPTE code is available.

Command	Code(CC)	Parameter(CP)
STOP	02 _H	--
REWIND	03 _H	--
FAST FORWARD	04 _H	--
PLAY	05 _H	--
ZERO LOC	06 _H	--
LOC START	07 _H	--
BACKSPACE	08 _H	--
RECORD	09 _H	--
RESET TIMER	0E _H	--
SET PLAY SPEED	51 _H	Länge: 1 Byte
3.75 ips		00 _H
7.5 ips		01 _H
15 ips		02 _H
30 ips		03 _H

Status messages

APPLICABLE TO MODULES NO. 1.820.751.21 or higher
TOGETHER WITH MASTER SOFTWARE 17/87 or higher

Status of the A812 as an acknowledgment in conjunction with unconditional status request, according to the following pattern:

STX	BC	CB	SBA	SBC	STATUS	CS
-----	----	----	-----	-----	--------	----

where: STX = 02_H and CB = 82_H.

Important !! The following commands do not correspond to the normal SMPTE convention. They have provisionally been defined in this manner and released for use. They will be changed as soon as the final SMPTE code is available.

Meldung	Status-Anforderungs-Bytes:		Parameter (STATUS)	
	SBA	SBC		
TAPE DECK STATUS NEW TAPE DECK *STATUS OLD	03 _H 02 _H	01 _H 01 _H	NOT ACHIEVED ACHIEVED	
TAPE OUT STOP REWIND FAST FORWARD PLAY RECORD BACKSPACE ZERO LOC/ LOC START PLAY, REWIND ZERO LOC/ LOC START PLAY, FAST FORWARD			01 _H 02 _H 03 _H 04 _H 05 _H 09 _H 40 _H	81 _H 82 _H 83 _H 84 _H 85 _H 89 _H C0 _H 42 _H 43 _H
TAPE TIME	01 _H	04 _H	Codierung: BCD Format: HH MM SS FRAMES (0...24/25)	

Message Status request bytes SBA SBC Parameter (STATUS).

- * The last machine status remains stored and can be recalled if this is required by a special application.
- Notes:

The following error message

STX	BC	FF	FF	FF	FF	CS
-----	----	----	----	----	----	----

informs the control system that the last command from the controlled tape recorder has not been understood.

- The control system must transmit BREAK if the controlled tape recorder does not answer.

2.9 Daily Care

Daily care is limited to cleaning the soundheads, the capstan shaft, and the tape guidance elements.

Dust and oxide particles of the magnetic coating tend to accumulate on the soundheads and tape guides and can lead to gaps in the recording, so-called drop-outs.

Cleaning should be performed daily, or more frequently if contamination is visible. For cleaning work we recommend the STUDER cleaning set (part No. 10.496.010.00). It contains all utensils necessary for cleaning a tape recorder, a soundhead cleaning fluid, and aluminite cleaner.

Procedure: Moisten the yellow piece of cloth with soundhead cleaning fluid and clean all guidance elements that come in contact with the tape. Then wipe the cleaned parts with a dry section of the yellow piece of cloth.

Coarse accumulations in the grooves of the right-hand time code head can be removed with a hard brush, the bristles of which have been shortened to approx. 5 mm.

Important !! When you clean the capstan, make sure that no cleaning fluid penetrates into the bearing!

Dulling of the transparent VU-meter covers is possible if they come in contact with the cleaning fluid!

3 Power Supply Electronics

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3.1 Circuit Descriptions

General:

Section 3.1 is subdivided as follows: At the beginning (3.1.1) a circuit description of the general modules (power supply, supply voltage monitoring) is given, followed by a discussion on the control and tape deck modules. The latter has been broken down into two function blocks (3.1.2 and 3.1.3) so that the interaction of the individual modules can be presented. The criterion for this subdivision is the common data bus. Following the block diagram which explains the functions of each block, a circuit description of the individual modules is provided.

Abbreviations	
ACIA	Asynchronous communication interface adapter
ADC	Analog-to-digital converter
CMOS	Complementary metal oxide semiconductor
DAC	Digital-to-analog converter
FIFO	First in, first out
IRQ	Interrupt request
LSB	Least significant bit
MPU	Microprocessor unit
MSB	Most significant bit
NMOS	N-channel metal oxide semiconductor
NMI	Non-maskable interrupt
PIA	Peripheral interface adapter
PIO	Parallel input/output
PROM	Programmable read-only memory
RAM	Random access memory
ROM	Read-only memory
SSDA	Synchronous serial data adapter
VMOS	Vertical metal oxide semiconductor

3.1.1 Power Supply

3.1.1.1 Power Supply Electronics GRP01 - GRP12

Order No.

Supply electronics

1.811.510

Function:

- Supply of the GRP30 (SWITCHING STABILIZER PCB 1.820.790) with a filtered DC voltage (approx. 50 to 60 V), and the GRP8 (POWER SUPPLY CONNECTION BOARD 1.811.770) with two filtered DC voltages (approx. ± 70 to ± 90 V).

Circuit description:

The line voltage is applied to a 3-pin power inlet (GRP01/ELM1). The insulation of the power supply corresponds to IEC65, protection category 1; the protective ground terminal is connected to chassis (GRP5/ELM1). The interference suppression of the machine conforms to VDE 871, category B. From the power inlet the AC voltage is taken via the power switch (GRP2/ELM1), the primary fuse (GRP01/ELM2), the power line filter (GRP3/ELM1), and the 100V/120V/140V/200V/220V 240V line voltage selector (GRP04/ELM1) to the power transformer GRP6. The primary windings (ELM1 and ELM2) consist of a 100 V and an 18 V winding that are connected in series or in parallel, depending on the switch setting of the line voltage selector. The secondary windings (ELM3/4) are distributed as follows:

For transformer 1.811.520: Two 50 V windings connected in series and four 20 V windings per coil.

For transformer 1.811.525: two 35 V windings connected in series, three 20 V windings and one 40 V winding per coil.

The secondary windings are combined into the following groups:

- The first comprises two 40 V windings (20 V + 20 V) and supplies via the fuse (GRP7/ELM2), the rectifier D3 (GRP7/ELM5) and the filter capacitors C8, C9 (GRP7/ELM5) the positive section of the SWITCHING STABILIZER (+STABIN).
- The second comprises two 40 V windings, connected in parallel (on the transformer 1.811.520 two 20 V windings connected in series) and supplies via the bridge rectifier (GRP7/ELM6) and the filter capacitor C10/GRP /ELM10) the negative section of the switching stabilizer (-STABIN). The AC voltages ACPWEB1/D1 are tapped on the AC side of the rectifier (GRP7/ELM6) and also connected to the SWITCHING STABILIZER (line voltage monitoring).
- The third comprises two 20 V windings connected in series that supply the capstan motor control (+CAPMOT) via the bridge rectifier (GRP7/ELM7) and the charging capacitor C11 (GRP7/ELM11).
- The fourth comprises the remaining windings: two 35 V windings (in series) connected in parallel (for the transformer 1.811.520 two 50 V windings connected in series) supply via the fuses (GRP9/ELM5,6) the bridge rectifiers D4, D5 (GRP9/ELM1,2) the charging capacitors C3, C4 (GRP9/ELM3,4) and the spooling motors (\pm PSVTMOT).

On the power supply connection board 1.811.770, filtering of the supply voltage for the spooling motors is implemented with the current compensated chokes L1 and L2 and the X- and Y-capacitors C3 to C14. R7 to R10 are used for balancing the charge of the capacitors C3, C4 (GRP9/ELM3,4). With the voltage dividers R1 to R6 the "high" voltage is stepped down and taken via J1 to the tape deck periphery driver 1.811.779 for monitoring the motor supply voltage.

Module identifications

- Index .81:** Transformer 1.811.520 + ventilator (controlled via fan connection board 1.811.799 = 15 VDC).
- Index .82:** Transformer 1.811.525 + ventilator (controlled via fan connection board 1.811.799 = 15 VDC).
- Index .83:** Transformer 1.811.525 + ventilator (controlled via fan connection board 1.811.798 = 7.5 VDC; software controlled only in PLAY/REC 1.811.997.23 (SW 17/87 or newer).

3.1.1.2 Switching Stabilizer PCB GRP32

Order No.

Switching stabilizer PCB	1.820.790
incl. STABILIZER/LIMITER PCB	1.820.792

Function:

- Generates all controlled voltages required by the tape recorder:
 - +5.6 V for the logic circuits
 - +15 V and
 - 15 V for the audio section
 - +24 V for the solenoid control
- Supply voltage (+REMSUP) of a serial remote control (approx. 50 V, current limitation at approx. 1A).

The +24 supply voltage of the connectors for parallel remote control and synchronizer is generated by a linear voltage regulator (IC15) with a fixed setting from +REMSUP.

Circuit description

SWITCHING STABILIZER

GRP32 PCB 1.820.790

By means of switching regulators this circuit produces from the input voltages +STABIN and -STABIN the +5.6 V and ± 15 V. The three switching regulator components (IC1, 2, 3) are supplied by one of the two linear voltage regulators for +26 V (IC103) and +24 V (IC8). IC103 and IC8 are mutually decoupled by D101 and D15. The three switching regulators operate synchronously with a clock frequency of 76 kHz (TD-C76K) which is generated by the MP UNIT TAPE DECK CONTROL 1.820.785 GRP20/ELM46. This clock pulse is checked for correct frequency by IC7.1/7.2, the parallel resonant circuit L4/C37, and the DUAL ONE SHOT IC6, and any noise is filtered out.

- +5.6 V control: From +STABIN the switching regulator produces the +5.6 V supply voltage. The clock pulse of IC6/pin5 is taken to IC1 (REGULATING PULSE WIDTH MODULATOR). IC1 contains the reference voltage source, an oscillator (not used in this application), an error amplifier, and a current limiting circuit.
- The output of IC1 (CA/CB) controls the driver transistor Q1, and via driver transformer T1 also the switching transistor Q4.
- From the pulsating voltage produced with Q4 and the free-wheeling diode D22, a new mean value is formed with L5 and C28.
- This DC voltage is refiltered with L1 and C26. The voltage fluctuations across L1 increase with rising output current and are used as information for the current limitation in IC5.2. The attack point of the limiter is approx. 7 A.
- The output voltage of the switching regulator can be adjusted with trimmer potentiometer R21.
- The ± 15 V control functions analogously; the two switching regulators produce the +15 V and the -15 V from +STABIN and -STABIN respectively. The +15 V regulator comprises the following components: IC3, Q2, T2, Q5, D23, L6, C35, L3, C30, AND IC5.1. The -15 V regulator comprises the following components: IC2, Q3, T3, Q6, D24, L7, C36, L2, C31, and IC4.1. The -15 V regulator is wired in such a way that its output voltage is of the same magnitude as the one of the +15 V regulator (TRACKING MODE) which means that no -15 V can be present when the +15 V are missing. The reference value of the output voltage is adjusted in common with trimmer potentiometer R6.
- +24 V control: The +24 V are produced from +STABIN with a preset linear voltage regulator (IC8).

STABILIZER/LIMITER

Order No.

PCB 1.820.792

- The +26 V and the -26 V are produced by a preset linear voltage regulators (IC103, 104) from +STABIN and -STABIN.
- The supply voltage for a serial remote control unit (approx. +50 V, uncontrolled) is produced from +CAPMOT.
- Two linear voltage regulators are used for limiting the current. IC101 is wired as a current source, the max. current is approx. 1 A. In the event of a short circuit, IC102 limits the input voltage of IC101 to approx. 35 V
- The comparator IC100 monitors the secondary voltage (ACPWE-D1, ACPWE-B1) of the power transformer; in the event of a power failure it signals T-PWRON = LOW to both CPUs. The machine is switched to STOP and SAFE after 120 ms. If the power failure is shorter than 120 ms, the logic state of the equipment does not change.
- The crowbar circuits comprising Q101 and Q100 respectively monitor the +5.6 V and the ± 15 V switching regulator. If one of these voltages is exceeded by approximately 3 V, the corresponding triac fires and short-circuits the +5.6 V to ground and the +15 V to -15 V.

3.1.2 First Block - MASTER SECTION

3.1.2.1 Machine Control

Order No.

MPU MASTER CONTROL	GRP20/EL44	1.811.786
MASTER SERIAL IF	GRP20/EL43	1.820.753
MASTER PERIPHERY CONTROL	GRP20/EL46	1.820.728

3.1.2.2 Interfaces

PARALLEL REMOTE INTERFACE	GRP35	1.820.738
SERIAL REMOTE INTERFACE	GRP33	1.820.729
SMPTE/EBU INTERFACE	GRP20/EL45	1.820.751
RS232/DATASAVE IF	GRP20/EL45	1.810.751

3.1.2.3 Keyboard & Display

TAPE DECK DISPLAY DRIVER	GRP52	1.811.776
TD PUSH BUTTON BOARD	GRP50	1.811.777
SUB PANEL PUSH BUTTON BOARD	GRP53	1.811.778
SHUTTLE PCB	GRP51	1.328.214
OPERATING ASSEMBLY		1.811.230
LCD UNIT	GRP54	1.811.233

3.1.2.4 VU-Meter + Time Code

Order No.

CHANNEL CONTROL

1.820.732

TC CHANNEL CONTROL

1.810.735

Functional description according to block diagram Fig. 3.1.1:

The 8-bit data bus of the MP UNIT MASTER is directly connected to the PARALLEL REMOTE INTERFACE, the TAPE DECK DISPLAY DRIVER, the MASTER PERIPHERY CONTROLLER, and the MASTER SERIAL INTERFACE. However, the 4-bit address is only connected directly to three modules.

The system clock (TM-ENB), the write/read signal (TM-RW), and three of the five SELECT signals (TM-SL2, TM-SL3, TM-SL6). For the other two modules these output signals are buffered via the MASTER SERIAL INTERFACE. This also applies to the required SELECT signals TM-SL4 and TM-SL5.

The MP UNIT MASTER consequently has direct access to these five modules. The SELECT signals are assigned as follows:

- | | |
|-------------|-----------------------------|
| ■ TM-SL2 -> | MASTER SERIAL INTERFACE |
| ■ TM-SL3 -> | SMPTE/EBU BUS INTERFACE |
| ■ TM-SL4 -> | TAPE DECK DISPLAY DRIVER |
| ■ TM-SL5 -> | PARALLEL REMOTE INTERFACE |
| ■ TM-SL6 -> | MASTER PERIPHERY CONTROLLER |

To ensure that the MP UNIT MASTER serves an interface request as quickly as possible, an interrupt processing scheme is used. For this purpose an interrupt decoder is integrated in the MASTER SERIAL INTERFACE. All external interrupt requests (TM-SEIR, TM-REMIR, RM-SHIR, TM-KBIR, and TA-AUIR) are taken to this module which on request supplies an interrupt (TM-IRQ) to the MP UNIT MASTER. Via the decoder the MP UNIT MASTER can more quickly recognize the unit to be served than this would be possible in polling mode.

The POWER ON RESET of the MP UNIT MASTER (TM-RESMP) is passed on via the MASTER SERIAL INTERFACE. From here a reset (TM-RESET) is also triggered if the MP UNIT MASTER does not execute the program correctly due to a fault.

The two serial lines (TM-RX and TM-TX) of the MP UNIT MASTER are not used by the SMPTE/EBU BUS INTERFACE.

They are intended for the traffic via the RS 232 ASCII interface, e.g. for communication with a terminal.

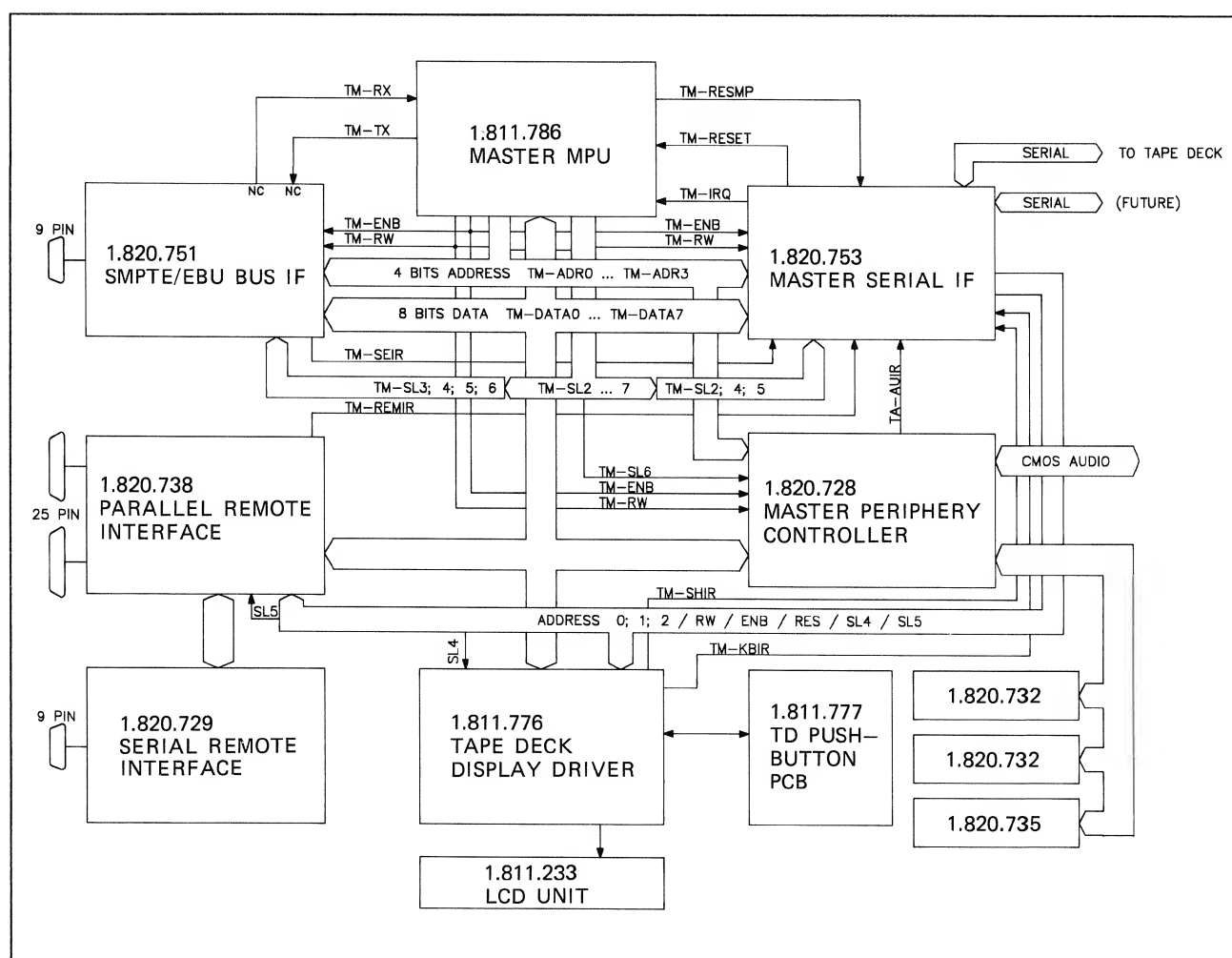


Fig. 3.1.1

3.1.2.1 Machine Control

3.1.2.1.1 MP Unit Master GRP20/EL44

Order No.

Functions:	MP UNIT MASTER	1.811.786
	<ul style="list-style-type: none"> Central control unit for the entire A812 Storing of all parameters (audio data, tape tensions, etc.) 	

Circuit description: IC17 is an 8-bit NMOS processor type MC6803-1. The control program comprising 48 K-bytes is stored in three ROMs (IC15, IC16, and IC18). The RAM consists of IC8, a CMOS-RAM with a capacity of 8 K-bytes. This RAM is buffered by a lithium battery which means that the data are not lost when the A812 is switched off.

Note: The life of the lithium battery is marked on the battery itself. In order to prevent loss of RAM data after a power off, the battery should be replaced before this expiration date.

With the 8-bit D-latch IC13 the addresses A0...A7 from the multiplexed data/address bus are assigned to the address bus. The system clock E (ENABLE PULSE) is generated internally with quartz-accuracy by IC17. After the clock pulses have been inverted (IC9), eight reference frequencies are generated with the binary counter IC7. The frequency of IC7, pin 6 is output via the 8-bit bus driver (IC2) as the clock frequency (TM-C76K), but this frequency is not used in this application (spare).

With a jumper, one of three frequencies (JS7, JS8, JS9) can be selected as the clock signal TM-C307K (after buffering by IC2). This signal is not used (spare).

To reduce the power consumption the system clock E is also output to the OE inputs (OUTPUT ENABLE) of ROM and RAM (IC8, IC15, IC16, and IC18).

IC12 inhibits the RAMSL signal if the RESET signal is present which means that access to the RAM is prevented during the reset phase.

With IC4 and IC6 the R/W signal is combined with the system clock E for correct timing during the read/write access.

IC14 monitors the 5 V supply and generates a defined reset pulse when the machine is switched on, or if transient power failures occur when the machine is in operation. The system can be reset manually by pressing the S1 key.

With the TM-RESET signal a reset of the MP UNIT MASTER can also be initiated by the MASTER SERIAL INTERFACE.

Jumpers JS12...JS17 set the operating mode of the MP UNIT MASTER IC17.

These jumper settings are fixed.

The address decoder IC11 (two 2-bit binary decoders) generate the CHIP SELECT signals from the addresses A13, A14, and A15 for the ROMs, the RAM, as well as the enable signal for IC3. IC3 is a bidirectional data bus buffer. The direction is determined by the read/write signal R/W.

An additional address decoder IC5 (3-bit binary decoder) generates the SELECT signals TM-SL2...SL7 as a function of the addresses A10...A15. The SELECT signals TM-SL2...5 are used for the interface modules. The interface modules are accessed through memory mapping (see Fig. 3.1.2).

The control bus is buffered with an 8-bit bus driver (IC1) and a gate of IC6.

JS3, JS4, JS5, and JS6 are set and connect the signals TM-BUSSW and TM-DRENB to the serial interface.

IC12 buffers the serial inputs/outputs for a terminal.

IC2 buffers the address and clock signals as well as the reset for the peripheral devices.

Memory-mapping

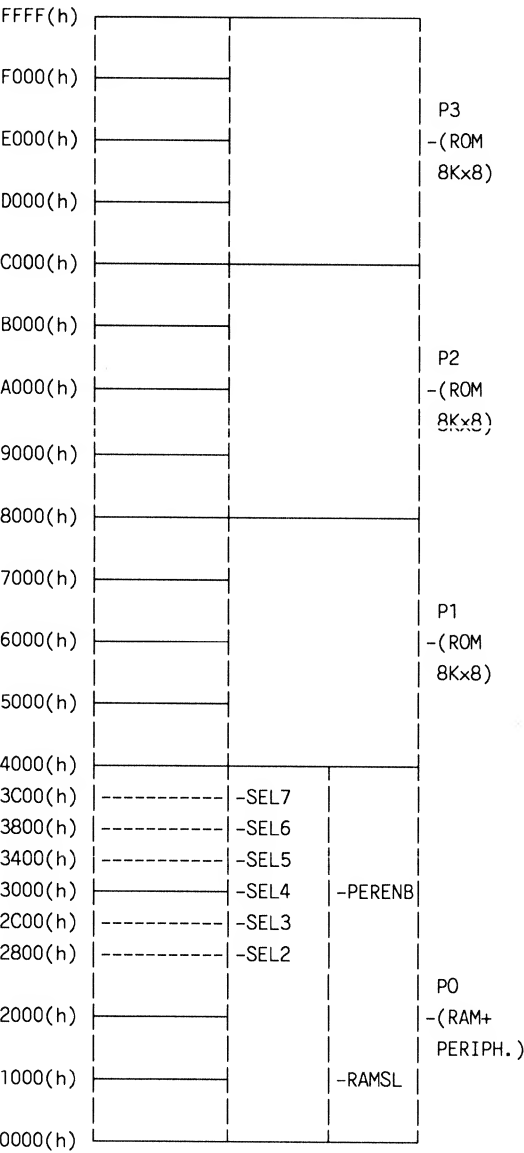


Fig. 3.1.2

3.1.2.1.2 Master Serial Interface GRP20/ELM43**Order No.**

Functions:	Master serial interface PCB	1.820.753
	<ul style="list-style-type: none"> ■ Interface to the TAPE DECK SERIAL INTERFACE and to a spare serial interface. ■ Buffering of the address bus and the control bus to the PARALLEL REMOTE INTERFACE as well as the TAPE DECK DISPLAY DRIVER. ■ IRQ initiation at the MP UNIT MASTER 1.820.786, as well as decoding of the interface that requests an IRQ. 	

Circuit description: IC5, a PIA (PERIPHERAL INTERFACE ADAPTER) and the two SSDAs (SYNCHRONOUS SERIAL DATA ADAPTER) IC6 and IC9 are integrated in the MP UNIT MASTER and permit direct access by the processor.

The required address decoding is performed by IC11 (two 2-bit binary decoder).

The communication with the INTERNAL SYNCHRONIZER and the TAPE DECK SERIAL INTERFACE is implemented with serial data transmission. The two SSDAs (IC6 and IC9) perform the required parallel/serial or serial/parallel conversion. The data transmission is performed with hardware handshake. The required data clock is derived from the system clock "E" by frequency division with a dual 4-bit binary counter (IC12), and is output buffered to both units by IC3 (8-bit bus driver). The serial signals are buffered by IC4 (8-bit bus driver).

With the two RS422 line drivers (IC1 and IC2) the control and address bus are connected with symmetrical voltage to the PARALLEL REMOTE INTERFACE and the TAPE DECK DISPLAY DRIVER.

Like IC5, IC6, and IC9 they also fulfill an output function.

Two retriggerable monoflops (IC13 must be retriggered by the MP UNIT MASTER in regular intervals. This is the case as long as the processor correctly executes its program. If a fault occurs and the program "hangs up", IC13 outputs a LOW pulse that reinitializes the processor (RESET).

IC8, IC7, IC10 and part of IC5 constitute a priority decoder for IRQ requests. Here, the five IRQ sources TM-SEIR, TM-REMIR, TA-AUIR, TM-SHIR, TM-KBIR as well as those of the two SSDAs IC6 and IC9 are combined by IC7 and IC10 with an 8-bit word of port PA (IC5) and supplied to the 8-to-3 priority encoder IC8. The 3-bit word at the output of IC8 (A0, A1, A2) is read via the port PB (IC5) after IC8 has initiated an IRQ.

If several IRQs are requested simultaneously, the 3-bit word at the output of IC8 contains three bits that correspond to the most significant input of IC8.

Like Q1, IC3 (8-bit bus driver) serves as a buffer.

3.1.2.1.3 Master Periphery Controller GRP20/ELM46

Order No.

Functions:

Master periphery controller PCB

1.820.728

- Interface to the AUDIO section, including the required TTL/CMOS level conversion.
- Connection to the channel control units CHANNEL MODE SELECTOR CH1, CH2 and CODE.

Circuit description:

The two PIAs (CI1 and IC2) are connected to the address data and control bus of the MP UNIT MASTER and consequently in their direct access path.

IC1 establishes the connection to the three CHANNEL MODE SELECTORS (CH1, CH2, CODE) via the AUDIO COMMAND BUS. With IC10 the bidirectional data bus is buffered, port PB (IC1) is the interface. IC11 (8-bit bus driver) buffers the control bus as well as the two 1-bit data signals to the three modules CHANNEL MODE SELECTOR CH1/CH2/CODE.

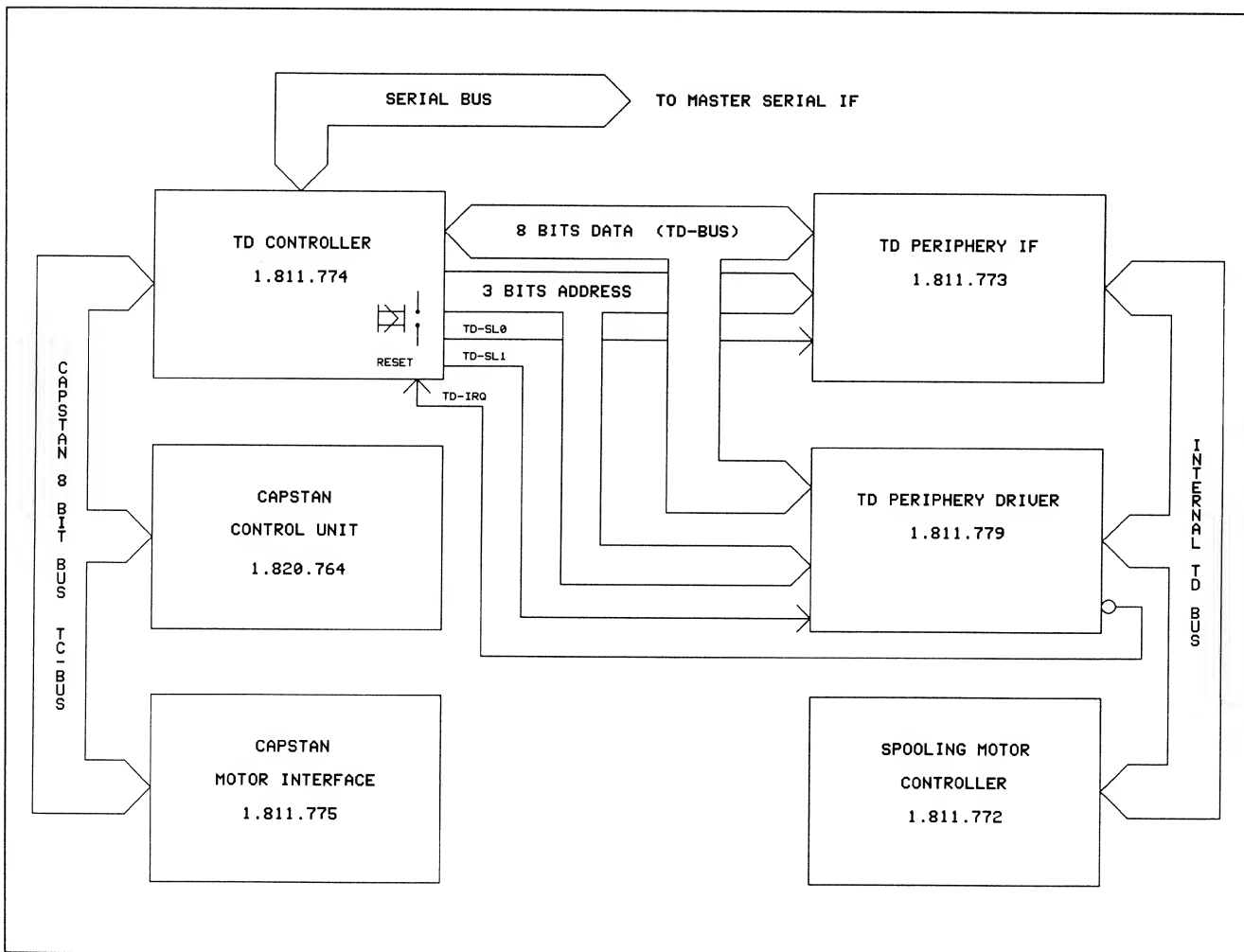


Fig. 3.1.3

Via the audio channel bus and the PIA (IC1) the MP UNIT MASTER receives the status information of the channel selectors (SAFE/READY) as well as the output selectors (INP, SYNC, REC).

These switches are connected to the audio command bus via an 8-to-1 multiplexer.

The feedbacks for the pilot lamps are transmitted by the MP UNIT MASTER via the PIA and the audio command bus to the lamp drivers (binary 3-to-8 decoder).

(See Fig. 3.1.3)

With the second PIA (IC2) the connection to the AUDIO section is established. Also here the port PB is used for the data bus, however, it is only unidirectional in the output direction. With port PA the address bus (PA4...PA7) and control bus is output. IC7, IC5, and IC6 function not only as buffers but also perform the required level conversion from TTL to CMOS.

The audio parameters are written into the audio amplifiers by the MP UNIT MASTER via the PIA (IC2) and the BUS converter (Fig. 3.1.4).

- With 8-way D-flip-flop
 - Input and output level 0, 4, 8 or 10 dBm
 - Changeover INP, SYNC, REP
 - Muting MUTE
 - Equalization 3180 s
 - Erase current
 - Drop-in or drop-out
- With 8-bit digital/analog converter (256-step attenuator):
 - Reproduce level
 - Reproduce frequency response (treble, bass)
 - Reproduce equalization
 - Record level
 - Record frequency response (treble)
 - Record equalization
 - Bias current

The signals from the AUDIO section TA-ACT01, TA-ACT02, and TA-ACTTC are combined with the PIA outputs CA2 and CB2 by three 3-way AND gates (IC4) and returned as the control signals CA-CHS01, CA-CHS02, and CA-SHSTC to the AUDIO section for address decoding.

Via the port PA3 the desired mode, MONO or STEREO, is output via the D-flip-flop IC9 and to the buffer IC7 as CA-MONO. It is subsequently read in again via port PA3 as the feedback TA-ACTM0.

IC8, a retriggerable monoflop, is continually retriggered by the program via CA2. The output signal CA-SAFE is therefore only active (LOW) if this retriggering is not interrupted.

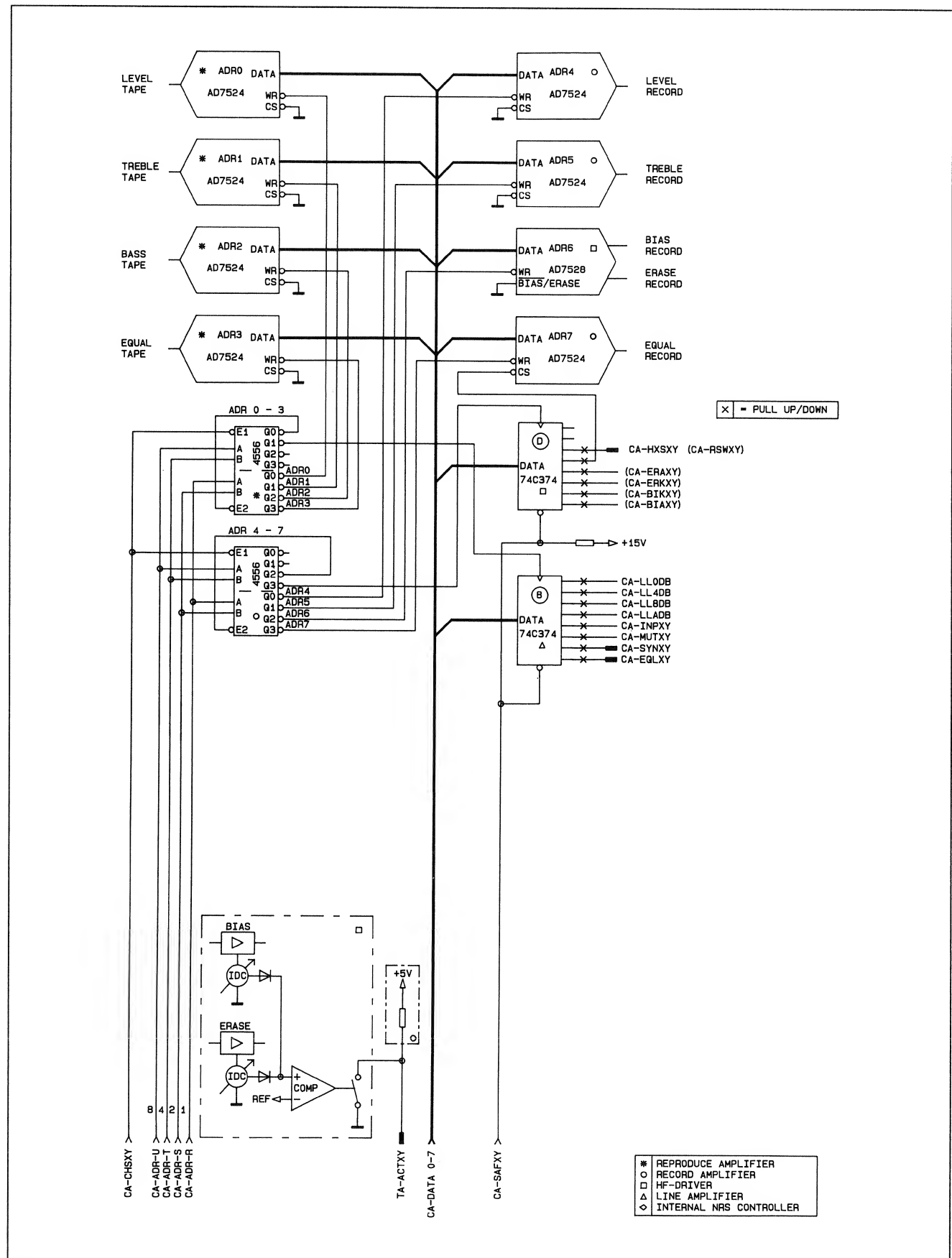


Fig. 3.1.4.

3.1.2.2 Interfaces

3.1.2.2.1 Parallel Remote Interface GRP35

Order No.

Function:	Parallel remote interface Interface between MP UNIT MASTER and <ul style="list-style-type: none"> ■ Parallel remote control ■ SERIAL REMOTE INTERFACE PCB ■ Synchronizer socket 	1.820.738
Circuit description	<p>IC3, a KEYBOARD DISPLAY INTERFACE, establishes the connection from the SERIAL REMOTE INTERFACE, the parallel remote control (control lines and feedback lines), and the synchronizer port to the MP UNIT MASTER.</p> <p>The bidirectional data bus is connected directly to the MP UNIT MASTER. However, the control signals for IC3 (CHIP SELECT, read/write, CLOCK, address 0 and RESET) arrive via the MASTER SERIAL INTERFACE. These signals are brought to TTL level by the two RS422 line receivers IC4 and IC2. These signals are subsequently prepared for IC3 by IC7, IC8, IC1B (2-bit binary decoder) and IC2.</p> <p>The eight inputs RL0...RL7 of IC3 are connected to the SERIAL REMOTE INTERFACE, so that the data from the serial remote port can be read in when the signals ROW0...ROW5 (OE) of IC5 are active. But also the inputs of the PARALLEL REMOTE or SYNCHRONIZER port are connected to the inputs RL0...RL7 of IC3 after buffering by the comparators via IC10 or IC6 respectively, when IC10/IC6 are enabled by the signals ROW6 or ROW7 of IC5. Scanning of the serial and parallel remote control port as well as the synchronizer is consequently performed by the outputs SL0...SL3 of IC3, via the binary decoder IC5.</p> <p>The outputs B0...B3 and A0...A3 of IC3 are connected to a 6-bit D-register (IC9) and an 8-bit D-register (IC14), and stored by the latter after the data have been transferred.</p> <p>For this purpose the data transfer signals L6 and L7 are decoded by IC1A (binary decoder).</p> <p>After buffering the outputs of IC9/IC14 are connected to the PARALLEL REMOTE and SYNCHRONIZER ports.</p>	

3.1.2.2.2 Serial Remote Interface GRP33**Order No.**

Function:	Serial remote interface	1.820.729
	<ul style="list-style-type: none"> Serial/parallel and parallel/serial conversion from/to the SERIAL REMOTE port. Transfer of data from/to the PARALLEL REMOTE INTERFACE. 	
Circuit description	<p>The SERIAL REMOTE INTERFACE is connected directly to the PARALLEL REMOTE INTERFACE and establishes the link to the serial port.</p> <p>With IC9, an RS422 transceiver, the connection between the serial port and the MPU IC8 is established.</p> <p>The latter performs the serial/parallel conversion. The data transmission to the PARALLEL REMOTE INTERFACE is handled by IC4 and IC1. Both 8-bit D-registers are used as 1-byte memories in order to support asynchronous transmission. For this purpose the byte is written into IC4 by the MPU (IC8) and connected by the address decoder IC2 to the output (IC4). The pulse shaper (EXOR IC3) produces a clock pulse from the T-SL0 signal. IC1 now accepts the data from IC4. With the T-OE signal these data are connected to the output of IC1 and accepted by the PARALLEL REMOTE INTERFACE (IC3). Since the T-SL0 signal is also read by the MPU (IC8) via the input P10, the MPU knows when the last data have been accepted. It can now output the next byte from the internal RAM. In this way the data transfer is controlled by the MP UNIT MASTER.</p> <p>The data to be transmitted are already buffered in the PARALLEL REMOTE INTERFACE and are read in by the MPU (IC8) via IC5. IC7 is a ROM whose addresses are controlled by IC6. The parallel/serial conversion is again performed by IC8, and the output via IC9.</p>	

3.1.2.2.3 SMPTE/EBU BUS Interface 1.820.751 GR20/ELM45**Order No.**

Function:	SMPTE/EBU BUS interface	1.820.751
	<ul style="list-style-type: none"> Interface between the MP UNIT MASTER and the external port for the SMPTE/EBU bus. 	
Circuit description	<p>IC17 is an 8-bit NMOS microprocessor with a clock frequency of 4 MHz; the required control program is stored in ROM IC16. The addresses A0...A7 are assigned to the address bus by IC15 (8-bit D-latch). IC5 (binary decoder) is the address decoder. IC18 is an ACIA (ASYNCHRONOUS COMMUNICATION INTERFACE ADAPTER) for serial communication. This adapter is designed for RS232 as well as RS422. IC3 is the driver for the RS232 output, and IC11 for RS422. The corresponding operating mode is selected with the jumpers JS2. IC7 is the serial receiver. Selection between RS232 and RS422 is possible with the jumpers JS5, JS6, and JS7.</p>	

	RS232	RS422
JS2	B-A	B-C
JS5	B-A	B-C
JS6	B-A	B-C
JS7	B-A	B-C

The clock pulse for serial output is derived from the system clock TM-ENDE of the MP UNIT MASTER via IC19 (4-bit counter); the baud rate is selected with jumper JS3.

JS3 A-B = 1200 baud
 JS3 C-B = 38400 baud for SMPTE/EBU bus, or
 = 9600 baud for RS232/RS422 interface

IC10 is a 14-bit counter that is used for detecting the BREAK character on the SMPTE bus. The counter is reset by each transmitted or received signal via pin 11. If no signals are available for a predetermined interval (468.75 μ s or 576 E-signal pulses), L level is output by IC6. If jumper JS8 is set to B-C, the DCD signal for IC18 is produced. As a result an interrupt is signalled for IC17 via the IRQ1 line. In the interrupt program the status register IC18 is then read by the CPU (IC17) and a BREAK character is detected. By means of corresponding software the bus interface is set to the active state.

IC4 is a DUAL PORTED FIFO chip with a capacity of 128 bytes. It is used as a bidirectional data buffer for the information exchange between the two MPUs.

The MPU IC17 writes the data into IC4 via IC9 (8-bit D-flip-flop) and reads them out of IC4 via IC13 (8-bit bus driver). The second port of IC4 is connected to the data bus of the MP UNIT MASTER via IC2 (8-bit D-flip-flop) and IC1 (8-bit bus driver).

3.1.2.2.4 RS232/Datasave Interface GRP20/EL45**Order No.**

	Interface for serial remote control	1.810.751
	<ul style="list-style-type: none">■ Connection to a terminal■ Data backup on tape■ Expanded test system	
Data backup on tape	<p>The audio parameters stored in RAM can be saved on tape via the 9-pin serial remote connector. For this purpose pins 4 and 6 of the 9-pin connector must be interconnected with the RECORD INPUT of the tape recorder (or an external cassette recorder). Also refer to Section 4.7.</p> <p>When the 9-pin connector for the serial remote control is connected to the REPRODUCE output of the tape recorder (or the cassette recorder), the stored audio parameters can be compared with the RAM content and read back into the RAM. Also refer to Section 4.8.</p>	
RS 232 connections	<p>Pins 2, 3, 7, 8, and 9 are required for connecting an external terminal equipped with an RS 232 interface. SNDATA is the transmit line, RCVDATA is the receive line.</p> <p>The two pilot lamps SEND and RECEIVE indicate whether data are transmitted by the microprocessor to the serial interface or vice versa.</p>	
DEBUG display	<p>The LEDs of the DEBUG display indicate the status of the data bus, the address bus, and the three select lines.</p> <p>Whether the WRITE or the READ signals of the MPU bus is to be represented can be selected with a program switch.</p>	1.810.757

3.1.2.3 Keyboard & Display

3.1.2.3.1 Tape Deck Display Driver GRP50

Order No.

	Tape deck display driver with:	1.811.776
TD PUSH BUTTON BOARD	GRP50	1.811.777
SUB PANEL PUSH BUTTON BOARD	GRP53	1.811.778
SHUTTLE PCB	GRP51	1.328.214
OPERATING ASSEMBLY		1.811.230
LCD UNIT	GRP54	1.811.233

Functions:

- Interface for display and keyboard.
- Analog/digital conversion of the analog signal from the SHUTTLE CONTROL potentiometer.

Circuit description:

The analog signal ANM-SH2 from the wiper of the SHUTTLE CONTROL POTENTIOMETER is converted by IC7/IC9 (AC) to an 8-bit data word and output on the data bus of the MP UNIT MASTER.

IC21, an RS422 line receiver, transfer the SELECT signal TM-SL4 and the three addresses A0...A2 of the MP UNIT MASTER 1.820.786 to the address decoder (IC18).

With the second RS422 line receiver (IC22) the read/write signals (RW), the reset pulse (RES), and the clock (ENB) are accepted by the MP UNIT MASTER and made available to IC9, IC8, and IC13 after they have been logically combined.

The TAPE DECK DISPLAY DRIVER is connected to the LC DISPLAY UNIT by means of connector P4.

The keyboard/display interface IC13 establishes the connection between the MP UNIT MASTER and the following modules:

a) PUSHBUTTON/DISPLAY PCB 1.820.767

The ten 7-segment display positions (with common anode) on the PUSHBUTTON/DISPLAY PCB are controlled in multiplex mode like the LED matrix (DL1.0...1.7, DL4.0...4.7, DL5.0...5.7).

All segments, the decimal points, and all cathodes of the LED matrix are controlled by a LED segment driver (IC11).

The common anodes of the corresponding 7-segment display position (DLZ1...DLZ10) are controlled by the signals TM-D0...TM-D9, the anodes of the LED matrix are controlled by the signals TM-L1, TM-L4 and TM-L5. These signals are produced in the two binary demultiplexers IC19 and IC20 based on the information supplied by IC13. They are buffered by the transistors Q1...Q15.

b) TAPE DECK PUSHBUTTON PCB 1.820.769

The Hall-effect keys on the PUSHBUTTON/DISPLAY PCB are wired in a matrix. After a key has been pressed they are scanned via IC14, an addressable 8-bit latch, in four rows (TM-EN1...TM-EN4). The TM-EN0 signal is responsible for the keys on the TAPE DECK PUSHBUTTON PCB.

The keyboard/display driver IC13 periodically outputs the five signals TM-EN0...EN4 and each time reads the corresponding column of the keyboard via its inputs RL0...RL7 in order to determine whether or not a key has been actuated. If this is the case the IRQ TM-KBIR is initiated.

3.1.2.4 VU METER + TIMECODE

3.1.2.4.1 Channel Control	Order No.
Channel control	1.820.732

3.1.2.4.2 TC Channel Control	Order No.
TC Channel control	1.810.735

- Function:
- Scanning the five keys (READY/SAFE, INPUT/REPRO/SYNC) and transmitting the information to the MPU MASTER CONTROL.
 - Control of the six feedback LEDs (REC/READY/SAFE, INPUT/REPRO/SYNC) or the seven feedback LEDs (REC/READY/SAFE, INPUT/REPRO/SYNC, CODE LEVEL).

Circuit description:

The control signals T-SADA, T-SADB, T-SADC, T-READSL, T-WRTSL, and the data signal T-DT-XY are connected to the MP UNIT MASTER via the MASTER PERIPHERY CONTROLLER. The five keys are scanned by the 8-to-1 data selector (IC2).

The feedbacks from the MP UNIT MASTER are supplied via a binary 3-to-8 decoder (IC1) by through-connecting the corresponding six/seven LEDs.

The 5V supply voltage is derived from the +15 V supply by means of an in-phase regulator (IC3).

3.1.3 Second Block**Order No.**

3.1.3.1	Tape deck control	
3.1.3.1.1	Tape deck controller 2x GRP 27	1.811.774
3.1.3.1.2	Tape deck periphery interface GRP26	1.811.773
3.1.3.1.3	Tape deck periphery driver GRP25	1.811.779
3.1.3.2	Spooling motors	
3.1.3.2.1	Spooling motor controller PCB GRP24	1.811.772
3.1.3.2.2	Slew rate limiter board	1.811.780
3.1.3.2.3	Spooling motor drive amplifier PCB GRP31 (left-hand motor)	1.811.771.00
	Spooling motor drive amplifier PCB GRP32 (right-hand motor)	1.811.771.81
3.1.3.3	Tape tension sensors	
3.1.3.3.1	Tape tension sensor PCB	
	GRP82 left	1.811.730
	GRP83 right	1.811.728
3.1.3.3.2	Move sensor PCB GRP82/(ELM3	1.811.732
3.1.3.3.3	Tape end switch PCB GRP82/ELM2 (left)	1.810.729
	Tape end switch PCB GRP83/ELM2 (right)	1.810.729
3.1.3.4	Capstan motor	
3.1.3.4.1	Capstan control unit GRP20/ELM42	1.820.764
3.1.3.4.2	Capstan motor interface GRP20/ELM41	1.811.775
3.1.4.3	Tacho sensor electronics PCB GRP38	1.021.695
3.1.3.4.4	Capstan motor drive amplifier PCB GRP39	1.820.774

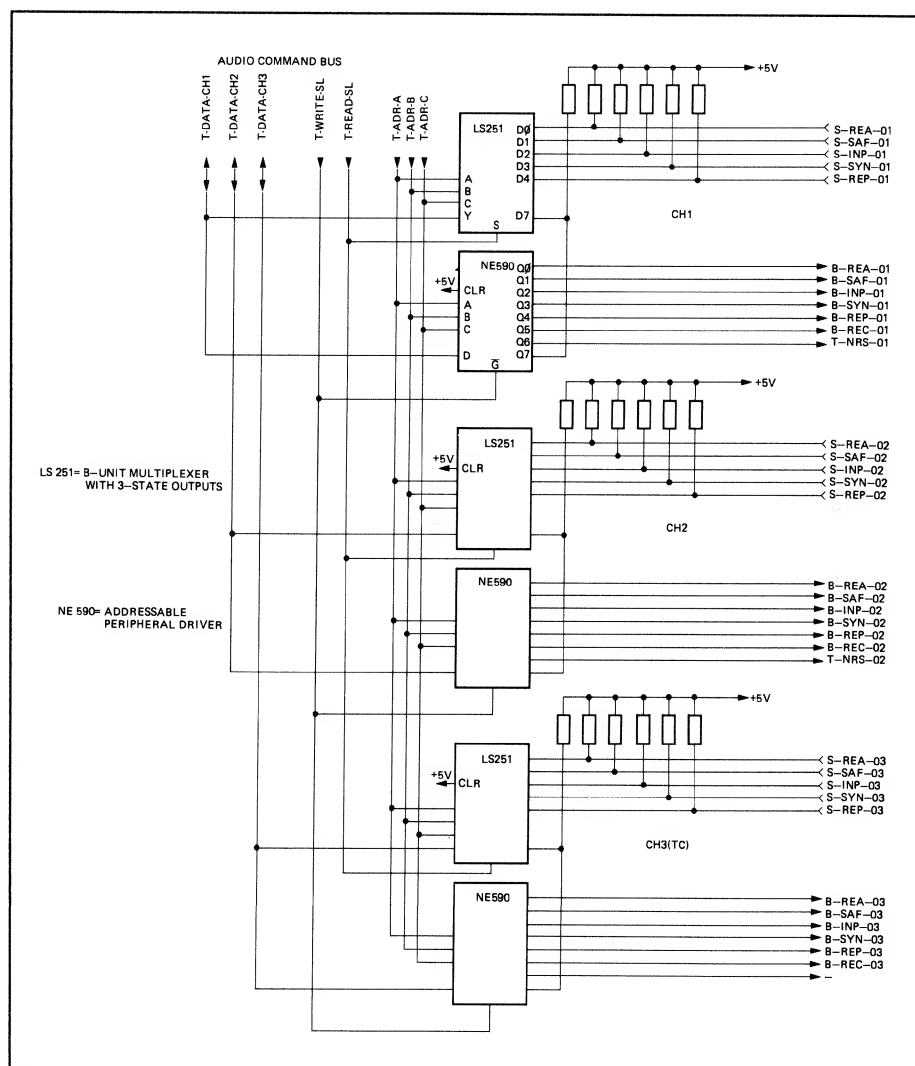


Fig. 3.1.5

3.1.3.1.1 Tape Deck Controller GRP27

Order No.

Tape deck controller

1.811.774

Functions:

- Slave processor of the MP UNIT MASTER for controlling the two spooling motor and the capstan motor. The tape deck controller accepts parametrized macro commands of the master processor and subsequently controls the tape transport mechanism of the machine by means of its peripheral devices. The status field of the tape deck is buffered in RAM and on request transmitted to the MP UNIT MASTER 1.811.786 (GRP 20/EL44).
- Serial communication to the MP UNIT MASTER with an SSDA (synchronous serial data adapter).
- Parallel communication with the CAPSTAN CONTROL UNIT 1.820.764 (GRP 20/EL42).
- Interface to the tape deck periphery

Circuit description

IC5 is an 8-bit NMOS processor MC 6803-1. The control program comprising 16 K-bytes (27128 for 1.811.774.2x) and 32 K-bytes (27256 for 1.811.774.3x), changeover with JP13, 14, 15 starting with PCB index -12 is stored in an EPROM (IC8). IC12 is a CMOS-RAM with a capacity of 2 K-bytes.

With the 8-bit D-latch IC7 the addresses A0...A7 from the multiplexed data/address bus of IC5 are assigned to the address bus. From the system clock E (ENABLE PULSE, 1.2288 MHz) internally generated with quartz accuracy by IC5, the 76.8 kHz reference frequency for pulse width modulation is produced with the binary counter on the tape deck periphery IF (1.811.773 or 1.811.783). With IC3 and IC4 the R/W signal is combined with the system clock E for correct timing during the read/write cycle. IC1 monitors the 5 V supply and generates a defined reset pulse when the machine is switched on, as well as after transient power failures when the machine is in operation. The system can be reset manually with key S1. The jumpers JP7...JP12 define the operating mode of the processor IC5. These jumper settings are fixed.

The address decoder IC11 (two 2-bit binary decoders) generates the CHIP SELECT signals from the addresses A13, A14, and A15 for the EPROM, the RAM, and the periphery chips, as well as the enable signal (PERENB) for IC9. The latter is a bidirectional data bus buffer the direction of which is determined by the write/read signal R/W. An additional address decoder IC14 (3-bit binary decoder) generates the select signals TD-SL0, TD-SL1, TD-SL2. The interface modules are addressed with memory mapping.

All signals for the local tape deck bus are buffered.

Memory map

FFFF	
F000	
E000	
D000	
C000	PROM 27128 (16kByte x 8)
B000	
A000	
9000	
8000	EPROM 27256 (32kByte x 8) (ab S2000)
7000	
6000	TIMER (Motor Clocks)
5000	
4000	SSDA (Master Interface)
3000	
2000	PIA (Capstan Interface)
	PERENB: 1100h -> TD Periphery Driver 1.811.779
	1000h -> TD Periphery IF 1.811.773
	TD Periphery IF 1.811.783 (ab S2000)
1000	
0000	CMOS RAM (2k x 8) IC 12

Fig. 3.1.6

The serial TTL bus (TPS-RX, TDS-TX, TDS-DTR, TDS-CTS, TDS-CLK) from/to the MASTER SERIAL INTERFACE 1.811.775 (GRP20/EL43) is buffered by an 8-bit bus driver IC18, and connected to the tape deck controller IC5 by IC16 (SSDA). IC16 performs the serial/parallel or parallel/serial conversion (send or receive) in synchronous mode. For this purpose TDS-CLK is supplied to the MASTER SERIAL INTERFACE of the receive clock. When a byte is received, IC16 triggers an interrupted (TD-IRQ) at the processor of the tape deck controller.

The communication with the lower ranking capstan processor is performed in parallel via PIA (parallel interface adapter) IC15, 17 via P5 to the CAPSTAN INTERFACE 1.811.775 (GRP20/EL41) and to the (future) internal synchronizer. This module is connected to the data, address and control bus of the tape deck controller (signals TD-...) and the capstan control unit (signals TC-...). With CS-PIA the tape deck controller selects the PIA chip IC15. IC17 is selected by the capstan control unit via TC-SL1. The communication of the two MPUs is performed in interrupt mode. The interrupt is always initiated on the opposite PIA.

In addition to the supply voltage P1 supplies the AC monitoring signal T-PWRON (power failure message). The DC supply monitoring signal T-SUPVON (all DC voltages available) is generated by the fuse failure detector 1.820.732; this assembly is not implemented in the A812 as a standard feature.

This module also contains a status LED DLQ1 which is activated by the tape deck controller when the initialization has been correctly completed.

3.1.3.1.2 Tape Deck Periphery Interface GRP26

Order No.

Tape deck periphery interface

1.811.773

Function:

- Based on the parameters supplied by the tape deck controller 1.811.774 (GRP27) and the analog output signals, the tape deck periphery interface produces analog control signals for the spooling motor controller 1.811.772 (GRP24) for each operating mode (STOP, PLAY, spooling, shuttle, tape dump, etc.).

The move signals (MVCLK, MVDIR) are evaluated in an 8-bit up/down counter. Optimum torque utilization of the asynchronous spooling motors is ensured by the frequency control with VCO (voltage controlled oscillator). This reduces the power dissipation in PLAY mode.

The processor clock is divided down to 76.8 kHz for the pulse width modulation of the output stages.

The voltage is monitored locally. A reference voltage of ± 10 V is generated.

The following rules apply:

- The tape tensions of the supply and take-up reel are controlled when the tape speed is controlled by the capstan motor (e.g. PLAY).
- Only the back tension is controlled if the pinch roller is not engaged (e.g. FWD, RWD, shuttle). The torque of the take-up motor is also preset. However in this case the reference value is not a tape tension but the spooling speed of the tape.

Circuit description

GRP 26

1.811.773

Functions only with tape deck software 2x)

1.811.997

The tape deck controller 1.811.774 (GRP27) has direct access to the tape deck periphery via the data, address and control bus (connector P2). An 8-bit bus transceiver (IC14) bidirectionally buffers the tape deck data bus that leads to the tape deck controller. The peripherals are decoded via the two 3-to-8 demultiplexers (IC11 and 12). The base address of the board is 1000 hex. IC17 is an 8-bit output port, IC19 and 8-bit input port.

The D/A converters (IC25 for left, IC22 for right) fulfill different functions: setting the tape tension reference values and setting the torque/speed for the spooling motor controller 1.811.772 (GRP 24).

The tape tension reference values are generated by IC25 (left) and IC22 (right); the opamps IC24 and IC21 convert the signals to unipolar voltages (0 to +10 V, TP11 for left, TP10 for right). IC 20/2 and 9/2 form the difference between the reference and the actual tape tension. The low passes R50, C16 and R34, C8 are used for suppressing high-frequency noise (TP7, TP6). PD controllers with switch-controlled I-content (Q3 and Q1 via IEN signal) are implemented with IC 20/1 and 9/1. From the bipolar voltages IC1 creates the unipolar control signals ANVML/R (0...10V) for the SPOOLING MOTOR CONTROLLER 1.811.772. With the TTL signal V/TTML/R the analog switch IC4 changes over between tape tension control (L) and torque and speed control (H).

PLAY mode The tape speed is determined by the capstan motor; the tape tension is controlled by booth spooling motors.

Spooling mode "FWD" (Rewind "RWD" analogous) The speed of the take-up motor is determined by the spooling control loop (reference value set by the tape deck controller 1.811.774 via IC25, analog switch IC4 in position HD; the actual speed value is measured with the tape move sensor 1.811.731, the four-edge evaluation and direction detection are performed on the tape deck periphery driver 1.811.779, the clock and direction signal are evaluated by two 4-bit up/down counters on the tape deck periphery interface 1.811.779 and subsequently processed by the tape deck controller 1.811.774 for determining the speed.

STOP The tape stands still. Both spooling motors are inactive. However both holding solenoids of the tape tension sensors (GRP 82/5 left, GRP 83/5 right) are energized.

TAPE OUT The tape is unthreaded. The spooling motors are inactive. The holding solenoids of the tape tension sensors are de-energized.

Via the opamp IC13, the D/A converter IC 15 controls the VCO (IC 10, control voltage 0...5 V). The motor control frequency is visible on test point 5 (effective motor control frequency = VCO frequency/512). IC2 and IC6 are switches controlled by the signal FML/R for changing over between a fixed frequency of 25.6 kHz (corresponds to a motor frequency of 50 Hz) and the variable VCO frequency. These signals are supplied via P1 to the spooling motor controller 1.811.772.

The 8-bit up/down counter (IC28 and 29) is supplied by the signals MVCLK and MVDIR. The 8-bit counter reading is connected to the 8-bit bus transceiver IC14 if the enable signal is available. This counter reading is processed by the tape deck controller 1.811.774 for computing the momentary tape address and tape speed. Two retriggerable monoflops IC27 are continually retriggered by the select signal (SLMVCK). If this retriggering fails, a RESET of the tape deck controller is initiated. At the same the periphery are reset via TD-RESET.

From the system clock E (enable pulse, 1.2288 MHz) the reference frequency of 76.8 kHz (TP2) is generated by the binary counter (IC3). This signal in turn is divided by three to obtain the motor reference frequency of 25.6 kHz (TP4).

The temperature compensated reference voltage source IC10 generates the tape deck reference voltage +10 VREF. The reference voltages -10 VREF and +5 VREF are derived by IC8.

A local supply voltage monitoring is implemented with the comparator IC5 (± 15 V). The output signals of the comparators are logically combined by Q2 (PENB) with a WIRED-OR circuit and the TD-PENB signal is supplied via P1 to the spooling motor controller 1.811.774.

Test points:

TP1	END	
TP2	76.8 kHz	(TTL)
TP3	+10 V reference	
TP4	25.6 kHz	(TTL)
TP5	VCO-OUT	(TTL)
TP6	Reference tape tension R - actual tape tension R	
TP7	MVCLK (MOVE CLOCK)	TTL
TP8	Reference tape tension L - actual tape tension L	
TP9	MVDIR (move direction)	(TTL)
TP10	Reference tape tension, torque control motor right	(analog 0...10 V)
TP11	Reference tape tension, torque control motor left	(analog 0...10 V)
TP12	GND	

3.1.3.1.3 Tape Deck Periphery Driver

Order No.

Tape deck periphery driver

1.811.779

Functions:

- A/D converter for conditioning analog signals for the tape deck controller
- Evaluation of the output signals of the spooling motor tachometer and the move sensor
- Spooling motor voltage monitoring
- Control of the tape deck solenoids
- Signal conditioning for user port (not externally accessible)

Circuit description

Via the data, address, and control bus (connector P2) the tape deck controller 1.811.774 has direct access to the tape deck periphery. An 8-bit bus transceiver (IC12) bidirectionally buffers the TD data bus that leads to the tape deck controller 1.811.774 GRP27. The periphery is decoded via the 3-to-8 demultiplexer (IC14). The base address of the board is 1100 hex. IC9 is an 8-bit output port, IC7 and 8-bit input port. The analog voltages of the two tape tension sensors left/right (AN-TTL and AN-TTR) as well as the motor supply voltage (SUPV) are taken via an active low pass filter IC1 and via an 8-to-1 multiplexer (IC11, controlled by the output port IC9) to the A/D converter, where they are converted to a digital value. The A/D converter works in interrupt mode via Q1 with the tape deck controller (control via IRQEN, IC9). The two 90° phase shifted TTL signals T-CLK1 and T-CLK2 (from the MOVE SENSOR 1.811.731 GRP 82/3) are buffered by IC13 (Schmitt trigger) and input to one D-register (IC4) each. The signals are transferred with the positive edge of the processor clock (TD-E). IC8 (4 EXOR gates) is a 4-edge evaluation circuit. The transfer value of T-CLK2 (7Q) is shifted with two clocks to the output 5Q, combined by an EXOR with the momentary level of T-CLK1, and output as the data signal to IC10 (D-flip-flop).

The D-flip-flop IC10 contains the move direction (TP8: L = forward, H = reverse) TD-MV-DIR. The input signals T-CLK1 and T-CLK2 are also EXORed and shifted through to 1Q via 4D in four cycles or to 2Q in three cycles. This logical combination produces the counting pulses (TD-MVCLK) which are supplied to the up/down counters 74LS 699 on the tape deck periphery interface. The signal TD-MVCLK is a pulse with a width of 0.8 s which is delayed relative to the direction signal (TP-MVDIR) by an additional 0.8 s. Only if 4D and 4Q have different levels will the NAND gate (IC2) be enabled for through-connecting the processor clock (TD-E) so that the data signal is received by IC10.

The D-flip-flop IC10/1 divides the TD-MVCLK signal by two to produce the TD-MVCLKS signal.

Move Sign.	T-CLK1/2	TD-MVCLK (4-slope- evaluation)	TD-MVCLKS (divided by 2)
3,75 IPS	16 Hz	64 Hz	32 Hz
7,5 IPS	32 Hz	128 Hz	64 Hz
15 IPS	64 Hz	256 Hz	128 Hz
30 IPS	128 Hz	512 Hz	256 Hz

Fig. 3.1.7

The signals of the two spooling motor tachos (WCLK1/2 L/R) are also processed via a 4-slope evaluation (IC 17, 19, 21). A PROGRAMMABLE COUNTER TIMER 68A40 on the tape deck controller 1.811.774 (GRP27) is used as a counter. The sense of rotation is supplied via two D-flip-flops (IC18) to an input port of the tape deck periphery interface 1.811.773 GRP26.

Via P5 the already divided positive and negative spooling motor supply voltage (+Ucomp, -Ucomp) is tapped differentially with IC6 and converted to a unipolar signal (TP2, 0...5V) which is supplied to the A/D converter IC3. R25 and D11 monitor the 24 V solenoid supply by means of the TD-24VSC signal, which is taken to an input port of the tape deck periphery interface 1.811.773.

The following signals are supplied to connector P6 (USER PORT) by the drivers IC23/24: TD-MVCLKS, TD-MVDIR, TD-YTRSP, TD-TRSP (the latter two are not used because the OPTO SENSOR module 1.820.793 is not implemented. All tape deck solenoids are controlled via IC8 (3-to-8 demultiplexer driver).

Test points:

TP1	GND	
TP2	SUPV Motor supply voltage	(analog 0...5 V)
TP3	MVCLK Move clock	(TTL)
TP4	WDIRL Wind direction left	(TTL)
TP5	WCLKL Wind clock left	(TTL)
TP6	WDIRR Wind direction right	(TTL)
TP7	WCLKR Wind clock right	(TTL)
TP8	MVDIR Move direction	(TTL)
TP9	MVCLKS Move clock symmetric	(TTL)
TP10	END	

3.1.3.2.1 Spooling Motor Controller PCB GRP24

Order No.

Spooling motor controller PCB

1.811.772

The spooling motors are 3-phase 4-pole asynchronous motors with hollow rotor in delta wiring. These are 3-phase controlled (for switching principle see SPOOLING MOTOR DRIVE AMPLIFIER 1.811.771 GRP31/32). An artificial 3-phase network with pulsed static power converter that employs the undershooting principle is used.

For each motor two 60°C shifted sine wave signals of identical amplitude, constant phase relation, and variable frequency are generated. The sine waves are generated digitally with counters, PROMs and DA converters. One PROM (512 x 8 bit) contains the discrete values of two 60°C phase shifted sine wave signals of one period. A counter switches the PROM from address to address as a function of the counter clock frequency. The corresponding data are processed by DA converters at whose outputs the analog sine wave signals appear. The amplitude can be adjusted with a DC voltage at the VREF input, while the applied counter frequency influences the frequency of the sine wave voltage, and the counter direction signal influences the sense or rotation. These analog signals are taken to comparators which in turn are supplied by a 76.8 kHz delta signal. This results in a PWM signal which is supplied to the SPOOLING MOTOR DRIVE AMPLIFIER 1.811.771 (GRP31/32).

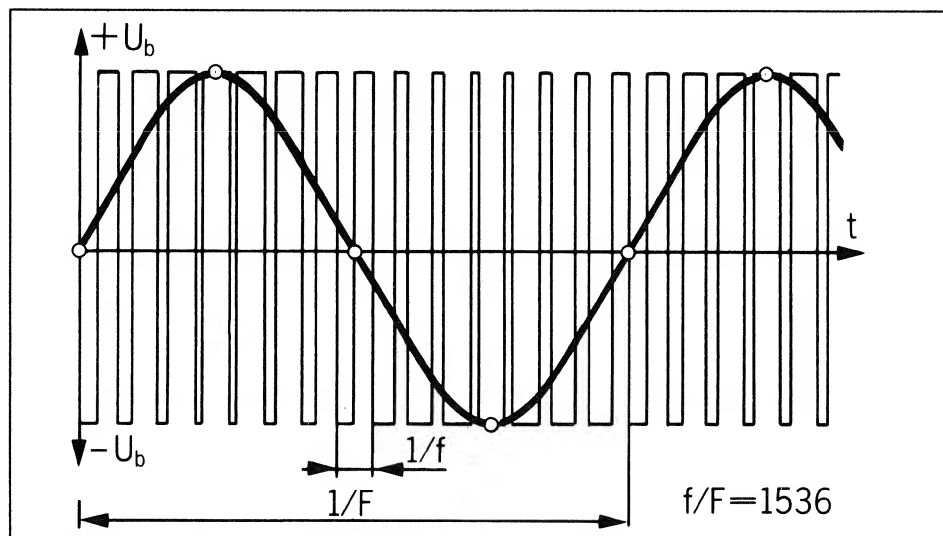


Fig. 3.1.8

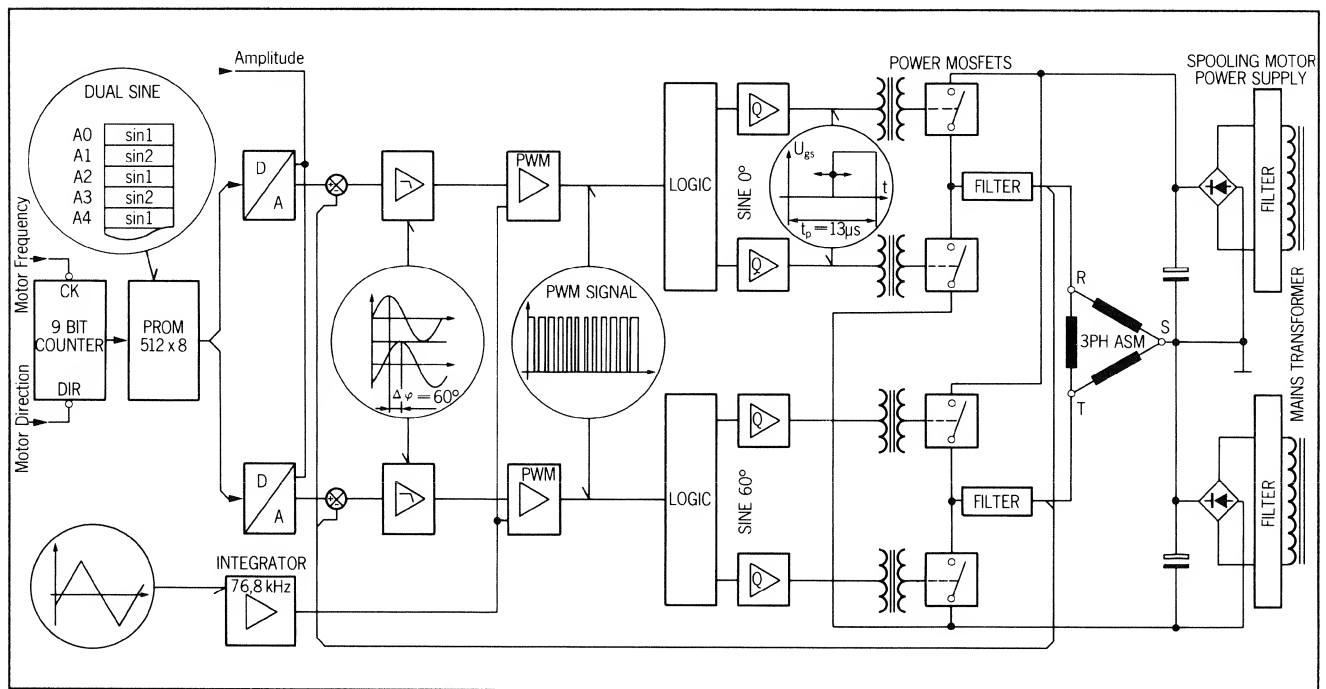


Fig. 3.1.9

Function:

- Preparation of the required signals for controlling the two 3-phase motors.

Amplitude: AN-VML/R (0...10 V)

Frequency: MFL/R (TTL) 12.8 kHz (= 25 Hz) to 51.2 kHz (= 100 Hz)

Sense of rotation: DIRL/R (TTL)

**Circuit description
(board index 20)**

This circuit description relates to the control of the left-hand motor (right-hand motor analogous). The 9-bit up/down counter (IC 9, 16, 23) switches the PROM (IC8) as a function of the counter clock frequency from address to address (even addresses SIN1 phase-shifted by 0°, odd addresses SIN2 phase-shifted by 60°). The DA converters IC6 (SIN1) and IC7 (SIN2) convert the data to an analog signal. The opamps IC14, 15 produce from this signal a bipolar analog signal (+10 Vmax.), whose amplitude depends on the applied reference voltage.

Any DC components are eliminated by means of the high pass C24, R36 and C25, R35. The base points relate to ground. The signals are subsequently taken to an active low pass filter of the 2nd order (IC 25). With the negative input a regulator (integrator R32/C49 and R53/C50) with infinite DC amplification is connected for compensating DC voltage components on the power side (signal DCPHR/T-R/L). The low-level signal FETs short-circuit the capacitors when the output stage is inactive (i.e. PENB-H).

IC1 is a temperature-compensated reference voltage source; the integrator is supplied via the voltage divider R5, R11, clocked with Q1 (76.8 kHz). A balanced delta signal (± 12 V) appears at the output (TP3). This signal supplies all comparators via 100 Ω decoupling resistors. The pulse width modulated signals are visible after the comparators (IC22, 28) on test points 6 and 11. The signals SIN1 and SIN2 are taken to the SPOOLING MOTOR DRIVER 1.811.771 via the Schmitt trigger (IC26). The retriggerable monoflop (IC4) monitors the availability of the clock frequency (TD-SCK signal).

Test points:

TP1	12.0 V ± 0.2 V
TP2	GND
TP3	Delta ± 12 V
TP4	SIN1-L (analog ± 10 Vmax)
TP5	SIN2-L (analog ± 10 Vmax)
TP6	PWM SIN1-L (15 V)
TP7	PWM SIN2-R (15 V)
TP8	SIN2-R (analog ± 10 Vmax)
TP9	SIN1-R (analog ± 10 Vmax)
TP10	GND)
TP11	SIN2-L (15 V)
TP12	SIN1-R (15 V)

3.1.3.2.2 Slew Rate Limiter Board

Order No.

Slew rate limiter board

1.811.780

Function:

- Limiting the rise and decay speed of the control signals (AN-VML/R) for the two spooling motors. Local supply voltage monitoring for the spooling motor controller 1.811.772 GRP24

Circuit description

The reference voltage source (IC2, UREF = 2.55 V) is supplied via R8, R9 with 5.6 V as well as +15 V. IC1 and Q1 monitor the supply voltages 5.6 V, ± 15 V in combination with the RESET signal, and control the self-conducting FET Q2. The POWER ENABLE signal (PENB) exists only if all supply voltages are available (AND gate IC12). The timing elements R34, R35, C8, IC6 and IC10 are responsible for the ON delay, IC13 latches the signal, provided the two control voltages AN-VML/R are below 1 V (signal PIN 1, IC12). The flip-flop IC 13/1 synchronizes the PENB signal with the 76.8 kHz delta signal (maximum value of the delta voltage), and this signal is output via the level shifter IC7 to IC5 which takes the signal to the spooling motor controller 1.811.772.

IC3 and 9 together with R17 and R36 form a positive (IC8 and 14 with R23 and R38 a negative) current source which charge or discharge the electrolytic capacitors C7 and C6 via the bridge rectifiers D13...D16 and D22...D25 (max. rise time approx. 120 ms, max. decay time approx. 70 ms).

The now limited output voltages AN-VML/R are compared by the comparator IC4 (the reference voltage is supplied by the voltage divider R13, R15, approx. 1 V) and produce a logic signal (5 V) if AN-VML and AN-VMR are less than 1 V. These two signals are combined at IC 12/3 and enable the PENB signal with IC 12/1. D4, D5, D9, D10, D19, D20, D26 and D27 are not used.

3.1.3.2.3 Spooling Motor Driver Amplifier PCB GRP31/GRP32

Order No.

Spooling motor drive amplifier PCB left-hand motor	1.811.771.00
Spooling motor drive amplifier PCB right-hand motor	1.811.771.81

Function:

- Controlling a 3-phase motor (in delta connection) by means of DC-AC converters in both rotation directions based on two pulse width modulated control signals SIN1-L/R, SIN2-L/R supplied by the SPOOLING MOTOR CONTROLLER 1.811.772 (GRP24/ELM1 (left), LEM2 (right)).

Supply voltage DC = 180 V

Control frequency 25 Hz...100 Hz
AC = 0...63 V

Circuit layout The reference point of a "star" connected motor is the star point (neutral terminal). If the three phase-shifted voltages are produced artificially, the reference point can be defined as desired because the motor does not require a connection to the star point. If the reference point is placed at one of the corners (one winding phase) and if the 60° shifted, in magnitude identical voltages U_1 and U_2 are combined, their difference yields a voltage U_3 of identical magnitude which is connected to the 3rd motor winding in correct phase relationship.

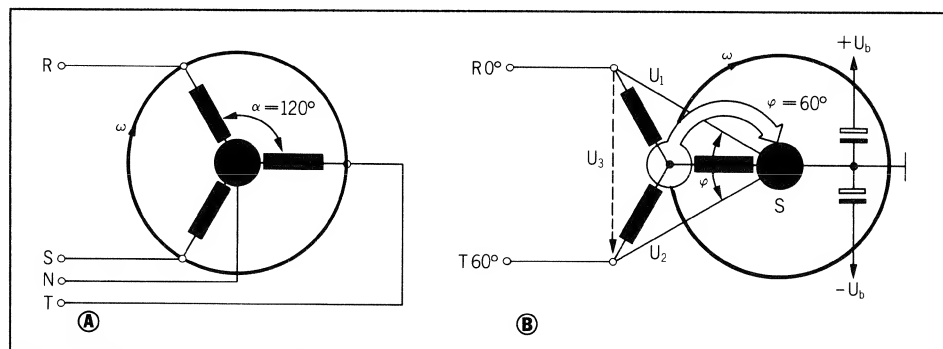


Fig. 3.1.10

Circuit description

The pulse length modulated signals at the inputs SIN1 and SIN2 of 1.811.772 (GRP24, ELM1 or 2) are taken via the Schmitt trigger (IC1) to XOR elements (IC2, IC5) which split the signal into an inverted and a non-inverted signal which are taken to the driver stages (Q4-Q15). The latter are only operative when this is allowed by the externally supplied power enable signal (PENB). Two switch pairs (Q20, Q212 and Q22, Q23) are controlled via the two pulse transformers (T1, T2) with a constant frequency of 76.8 kHz and a variable pulse duty factor. For creating the moment only the current flow is of significance. The energy stored in the filter chokes (L2, L3) maintains the current flow during off periods. If the pulse duty factor of all pulses is 50%, the mean current flow is zero. If the carrier is modulated, the mean value changes sinusoidally according to the degree of modulation between a positive and a negative maximum value. The two resulting voltages (AN-R, AN-T) with identical amplitudes must be 60° phase shifted relative to each other.

Module identification:

Index .81: Introduction of chokes (L4-L7) in the load circuit

Index .82: Push-pull control of the pulse transformers, idle time in the gate control circuit shifted, supply voltage monitoring combined with PENB signal (Q3).

3.1.3.3.1 Tape Tension Sensor PCB**Order No.**

Tape tension sensor:	GRP82; left	1.811.730
	GRP83; right	1.811.728

Function:

- Measuring the tape tension; the angle by which the sensor lever is deflected is converted to an analog voltage (AN-TTL or AN-TTR respectively) and supplied to the TYPE DECK PERIPHERY DRIVER 1.811.779 (GRP25/ELM 5 (left)/ELM6 (right)).

Circuit description: IC4 together with R15/R16 and C9 forms an oscillator which oscillates with a frequency of approx. 833 kHz. The oscillator signal is amplified and induces in L1 a magnetic pulsating field. The degree to which the decoupling coil L2 is damped by the screen plate coupled with the sensor arm, depends on the deflection of the tape tension sensor. D2, D3 are full-wave rectifiers. The signal is amplified by IC3. The signal AN-TTL/R is aligned with R27 to 0 ± 50 mV (no deflection) and with R6 to $4 \text{ V} \pm 50$ mV (full deflection).

Test points:

TP1: Signal AN-TTL/R ($0 \dots 4 \text{ V}$)

TP2: Signal TAPE END (TTL)

TP3: GND

3.1.3.3.2 Move Sensor PCB GRP82/ELM3

Order No.

Move sensor PCB

1.811.732

Function:

- Scanning and transmitting the tape speed and the move direction (actual value) of the tape to the TAPE DECK PERIPHERY DRIVER 1.811.779 (GRP25/ELM25) in the form of two TTL square-wave signals with 90° phase shift.

Circuit description:

The 20 teeth of the toothed ring interrupt the two light barriers DLQ1 and DLQ2 when the left-hand guide roller turns. The light barriers are arranged in such a way that the output signals (TTL) T-CLK1 and T-CLK2 are phase shifted by 90° relative to each other.

Admissible tolerance range of the phase shift $\pm 30^\circ$

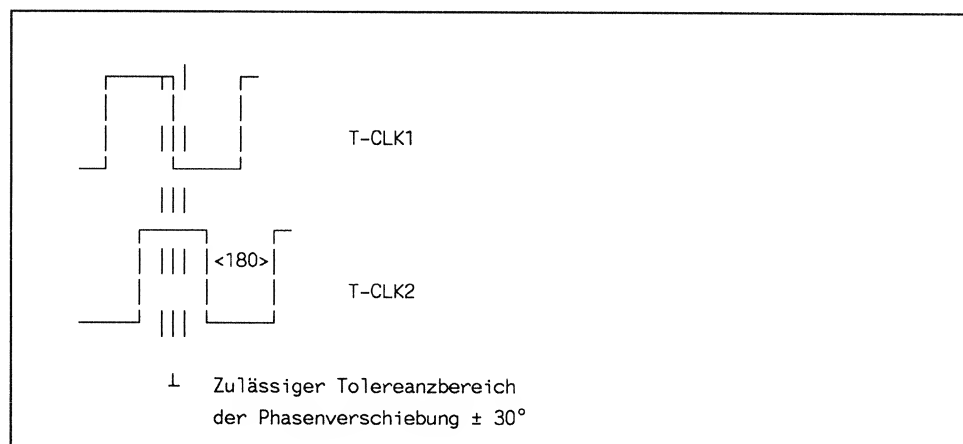


Fig. 3.1.11

Circuit with Index

00/.81/.82

The output signals of the light barriers are converted to TTL signals by IC1 (dual differential line receiver with Schmitt trigger characteristic). The reference voltage is defined by R9/R10. R4 and R7 prevent any oscillation tendency.

Test points:

- TP1: GND;
 TP2: T-CLK2 (TTL),
 TP3: T-CLK1 (TTL)

Module modifications:

- Index .81 Introduction of light barriers with defined aperture H 22A1
 Index .82 Increase in the reference voltage
 Index .83 New circuit with automatic pulse duty adjust

Circuit with index .83:

The collector currents of the photo transistors produce a voltage signal on the load resistors R1/R12. Because the collector currents can vary extremely, The difference between the signal and its mean value is amplified by the subsequent opamp (IC1). To ensure that this circuit functions correctly when the tape stands still, the working range for forming the mean value is slightly narrowed (by R9, R2) relative to the signal range. Any oscillation tendency of the circuit is suppressed by regenerative feedback at the positive input of the opamp (by means of R6, R8). The output signals are converted to TTL level by Q1 and Q2.

In PLAY mode the scanner operates with the following frequencies:

A812	T-CLK1/2 (TTL)
3,75 IPS	16 Hz
7,5 IPS	32 Hz
15,0 IPS	64 Hz
30,0 IPS	128 Hz

3.1.3.3.3 Tape End Switch PCB GRP 82/ELM2, GRP 83/ELM2**Order No.**

Tape end switch PCB, left	1.810.729
Tape end switch PCB, right	1.810.729

Function:

- Detection of the tape end. Signals TEND L/R (TTL). Transmission to tape deck periphery driver 1.811.779.

Circuit description:

When the tape tension sensor is in its neutral position (i.e. AN-TLL/R = 0 V), the light barrier DL Q1 is enabled (hole in the linkage of the dashpot of the tape tension sensor). The signal is evaluated on the tape tension sensor board: 1.811.730 GRP 82 (left); 1.811.728 GRP 83 (right).

3.1.3.4.1 Capstan Control Unit 1.820.764 GRP20/ELM42**Order No.**

Capstan control unit	1.820.764
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Function:

- Autonomous control of the capstan motor

Circuit description:

IC16 is an 8-bit NMOS processor type MC 6803-1. The control program comprising 16 K-bytes is stored in ROM (IC17). IC15 is a CMOS RAM with a capacity of 2 K-bytes.

With the 8-bit D-latch IC14 the addresses A0...A7 from the demultiplexed data/address bus are assigned by IC16 to the address bus. The system clock E (ENABLE PULSE) is generated internally with quartz accuracy, and output to the retriggerable monoflop (IC8) after it has been inverted (IC11). After it has been inverted again, the clock is output as TC-ENB to the CAPSTAN INTERFACE and to the (future) synchronizer.

To ensure correct timing the system clock E is also output to the OE input (OUTPUT ENABLE of the ROM and RAM (IC17 and IC15).

IC18 monitors the 5 V supply and generates a defined reset pulse when the machine is powered on as well as after transient line voltage interruptions when the machine is in operation. The CAPSTAN MOTOR CONTROL UNIT can be reset manually with the key S1.

The TD-CRES signal can also initiate a reset of the TAPE DECK PERIPHERY CONTROLLER.

Jumpers JS1...JS3 define the operating mode of the MPU IC16. These jumper settings are fixed.

The address decoder IC12 (two 2-bit binary decoders) generates the CHIP SELECT signals from the addresses A13, A14 and A15 for the ROM, the RAM, as well as the enable signal for IC3 and IC2, and the signals TC-SL1...TC-SL4. IC3 is a bidirectional data buffer; the direction is determined by the read/write signal R/W.

The control bus is buffered by an 8-bit bus driver (IC2).

3.1.3.4.2 Capstan Motor Interface GRP20/ELM41

Order No.

Capstan motor interface

1.811.775

Functions:

- Changeover and processing of the signals of the internal or external varispeed control.
- Digital/analog conversion for controlling the CAPSTAN MOTOR DRIVE AMPLIFIERS.

Circuit description:

Eight bits are transferred via IC3 (8-bit D-register) from the DAC (IC4). The reference voltage for the D/A converter is set with IC6 (TP1: 10 V). The analog voltage is output to the CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774 via IC5 (AN-CSPDC).

The tacho signals TD-TCM1/TD-TCM2 generated by the TACHO SENSOR PCB GRP 84 are 90° shifted pulses from which the rotation direction signal TC-TCDIR (for the synchronizer) and TC-CDIRI for the CAPSTAN CONTROL UNIT 1.820.764 (GRP 20/42) are generated.

The two tacho signals TD-TCM1 and TD-TCM2 are converted by IC13 and one of the two AND/OR/INVERT gates with 2x2 inputs (IC14) to a signal with double the frequency (TC-TCMV, TC-TCTNI). With TC-TCMVI the CAPSTAN CONTROL UNIT determines the actual tape speed. By contrast, TC-TCMV is intended for a synchronizer.

The changeover between the internal or external varispeed control is performed by the signal TC-INEX. The two signals T-REFINT (from the internal) and T-REFEXT (from an possible external varispeed control) are buffered in IC12, and with the TC-INEX signal (from the CAPSTAN CONTROL UNIT) they are logically combined to the RC-REF signal by the second AND/OR/INVERT gate in IC14. This output signal is processed in the CAPSTAN CONTROL UNIT and is returned as TC-REFP.

The D-flip-flop IC9 divides the TC-REFP signal by 2 and supplies the result to the programmable timer IC2. The MPU of the CAPSTAN CONTROL UNIT can now determine the speed based on the selected nominal tape speed and the reference frequency from the varispeed control.

3.1.3.4.3 Tacho Sensor Electronics PCB GRP 38

Order No.

Tacho sensor electronics PCB

1.021.695

Function:

- Generating the capstan motor tacho signals TD-TCM1 and TCM2 (90° phase shifted square-wave signals with TTL level) and transmission of these signals via the CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774 (GRP85) to the CAPSTAN INTERFACE 1.811.775 (GRP20/ELM41)
- Processing of the output signals of the three Hall effect sensors on the HALL SENSOR PCB 1.021.697 (built into the capstan motor, not accessible for service purposes) and transmission of these signals to the CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774 (GRP85).

Circuit description:

The capstan motor tacho consists of two insulating plastic rings, the inside of which is equipped with teeth made of conductive plastic, and the externally toothed brass rotating mass (90 teeth) which are rigidly connected to the capstan shaft.

Of the conductive teeth on the plastic rings, 14 are electrically interconnected. This results in 6 tooth segments per ring. Three of these segments, each with a 120° offset, are also conductively interconnected.

These two groups of three, with the toothed rotating mass in between, can be considered as a variable capacitor whose capacitance varies when the rotating mass rotates (see Fig. 3.1.6). The frequency of this capacitance variation is 90 times greater than the rotational frequency of the capstan shaft. These two rings are mutually offset by one half tooth so that they can be used not only for detecting the rotational speed but also the sense of rotation.

The main oscillator (approx. 5.5 MHz) is implemented with Q1, L1, and C1. Its output signal is connected to the input of IC6 and IC7 (FM-IF amplifiers/demodulators).

The variable capacitances inside the capstan motors together with the tuning coils L2 (of IC6) and L3 (of IC7) constitute two parallel resonant circuits which are also tuned to the frequency of the main oscillator. When the capstan motor rotates, the tuning of the two parallel resonant circuits changes. The output signals of the two FM demodulators are AF signals with the same frequency as the capacitance change of the capstan motor tacho, but with a phase shift of 90°.

These two signals are first amplified by IC2/1 and IC5/1 respectively and subsequently converted to square-wave signals by the Schmitt triggers IC2/2 and IC5/2 respectively.

The edge steepness is subsequently increased with two comparators (IC1). The open collector outputs of the comparators (signals TD-TCM1 and TD-TCM2) are looped via the CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774 (GRP85) to the CAPSTAN INTERFACE 1.811.775 (GRP20/ELM41); the two pull-up resistors are also located there.

- The output signals of the three Hall effect sensors on the HALL SENSOR PCB 1.021.697 are taken via connector P2 to the TACHO SENSOR ELECTRONICS PCB 1.021.695 (GRP84). The comparators IC3 and IC4/1 evaluate the signals. The open-collector outputs of the comparators (signals TC-HALL1, TC-HALL2, and TC-HALL3) are connected to the inputs pin 10, 11 or 12 of the LOGIC CONTROL ICs on the CAPSTAN MOTOR DRIVE AMPLIFIER PCB 1.820.774 (GRP85). The three pull-up resistors are also located there.

Alignments and test points: see 3.3.10

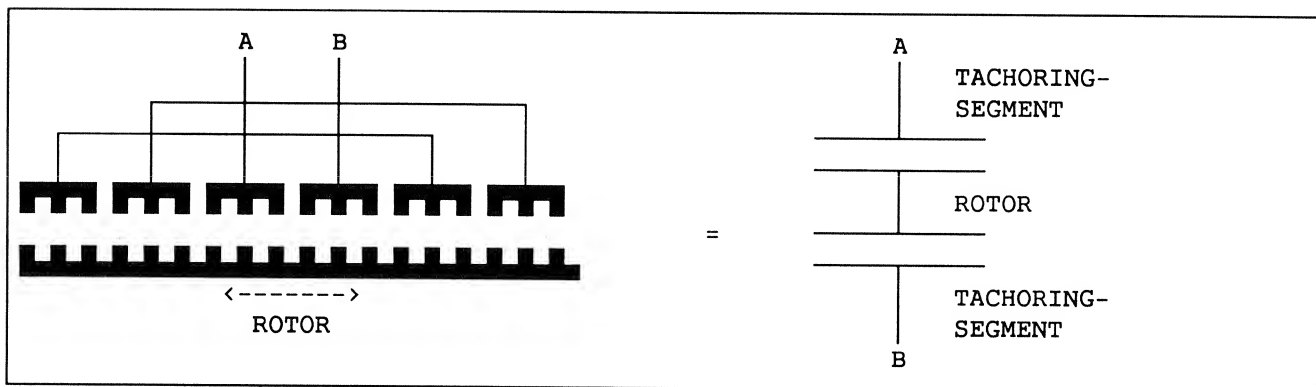


Fig. 3.1.12

3.1.3.4.4 Capstan Motor Drive Amplifier PCB GRP85

Order No.

Capstan motor drive amplifier PCB

1.820.774

The capstan motor is a 3-phase motor with a multipole permanent magnet rotor and a stator with 24 windings. The commutation is performed by Hall effect sensors in the motor and by logical combination of the output signals of the Hall elements. The motor speed is determined exclusively by the operating voltage. The nominal operating voltage is 40 V DC.

Functions:

- Low-loss control of the motor speed via the operating voltage by means of switching regulators (76 kHz) based on the analog input signal AN-CSPDC from the CAPSTAN INTERFACE 1.811.775 (GRP20/ELM41).
- Controlling the three stator windings with three-stage (+, high-impedance, ground) sinusoidal square-wave signals as a function of the output signals TC-HALL1...3 from the TACHOSENSOR ELECTRONICS PCB 1.021.695 (GRP84) and the "rotation direction bit" TC-CAPDC from the CAPSTAN CONTROL UNIT PCB 1.820.764 (GRP20/ELM42).

Circuit description:

The switching regulator is implemented with IC4. It receives its clock frequency (TM-C7CK, 76 kHz) from the MP UNIT 1.811.786 (GRP20/ELM44). The clock frequency is monitored in the band-pass filter around IC6/2, shaped into a square-wave signal by the Schmitt trigger IC6/1, and subsequently shaped by IC3 (ONE SHOT) into needle pulses of the same frequency. These pulses control the internal oscillator of IC4. If these pulses fail, IC4 generates its own clock.

The reference value is supplied as the signal AN-CSPDC (0 to 10 V) by the CAPSTAN INTERFACE 1.811.775 (GRP20/ELM41), buffered with IC1/1, and compared to the actual value with IC1/2. The voltage divider R14, 38/R44 determines the factor by which the operating voltage of the motor is greater than AN-CSPDC (approx. 4). The correcting variable is taken via IC2/2 to the switching regulator chip IC4.

The output of IC4 is connected to a fast switching stage with MOSFETs (Q1...8) which together with L3 and C10 produces the supply voltage + CAPMOT (about 43 - 63 V) for the capstan motor (approx. 5 to 40 V, depending on the speed).

The 6 outputs of the LOGIC CONTROL ICs, IC5, each control one Darlington transistor (Q10, Q12, Q14, Q16, Q18, Q20). Each pair of these six Darling circuits can be considered as a 3-position switch. Position 1: supply voltage; position 2: open; position 3: ground. These three switches produce the previously mentioned, 120° phase shifted sinusoidal signals C-PHASE-R, -S, and -T.

The timing of the three phases is determined by the TC-CAPDC. This permits fast deceleration as well as reversal of the capstan motor.

The supply voltage of the LOGIC CONTROL IC (IC5) is monitored with IC2/1. If it drops below approx. 4 V, the correct function of IC5 is no longer assured (switching transistors can become damaged). For this reason the output of IC2/1 inhibits the pulse width modulator, and its output voltage drops to 0 V.

3.2 Removing the Assemblies

- Open the flap on the amplifier bay: unfasten the stop screw (hexagon-socket-screw key No. 3). Open the flap with a sharp pull.
- Folding down the amplifier bay: unfasten the two stop screws (hexagon-socket screw key No. 3). Lightly lift the amplifier bay and press the button in the middle to release the catch. We recommend that you manually cushion the amplifier bay as it swings out. To close the bay it should be engaged with moderate momentum.

FOR MEASURING THE WEIGHTED AND LINEAR SIGNAL-TO-NOISE RATIO AND THE RF RATIOS, THE AMPLIFIER BAY MUST BE CLOSED AND THE THREE STOP SCREWS TIGHTENED!!

WARNING

DISCONNECT THE POWER PLUG BEFORE YOU REMOVE ANY HOUSING PANELS!

3.2.1 Covers

Headblock cover

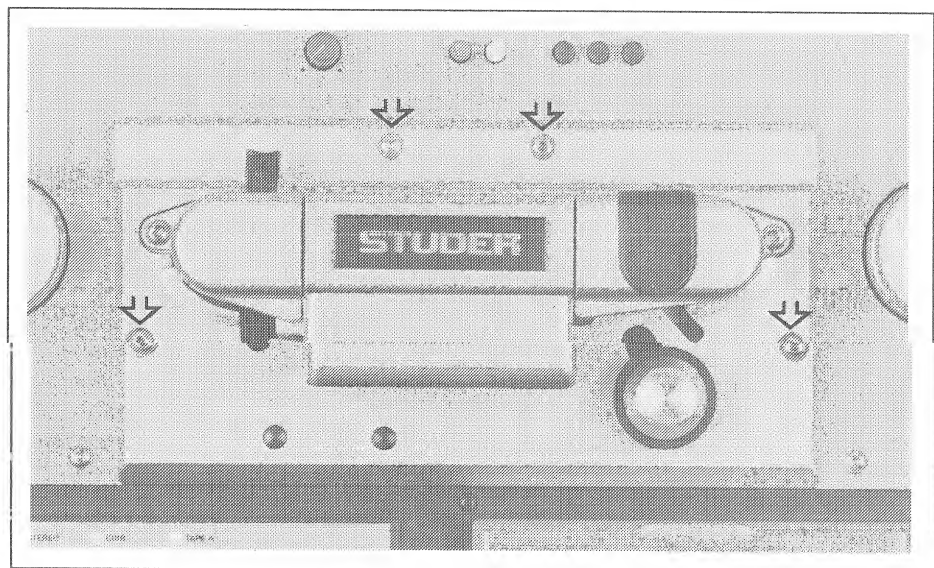


Fig. 3.1.13

- Unscrew the pinch roller cover (without tool) and remove the pinch roller.
- Unfasten 4 screws M4 (hexagon-socket screw key 2.5 mm)

Head cover

For aligning the azimuth of the audio heads, only the head cover needs to be removed.

- Unfasten 1 screw each (hexagon-socket-screw key 2.5 mm) on the left and right of the head cover.
- When reassembling make sure that the head feeder lines do not get pinched (applies particularly to time code machines).

Tape deck cover, top

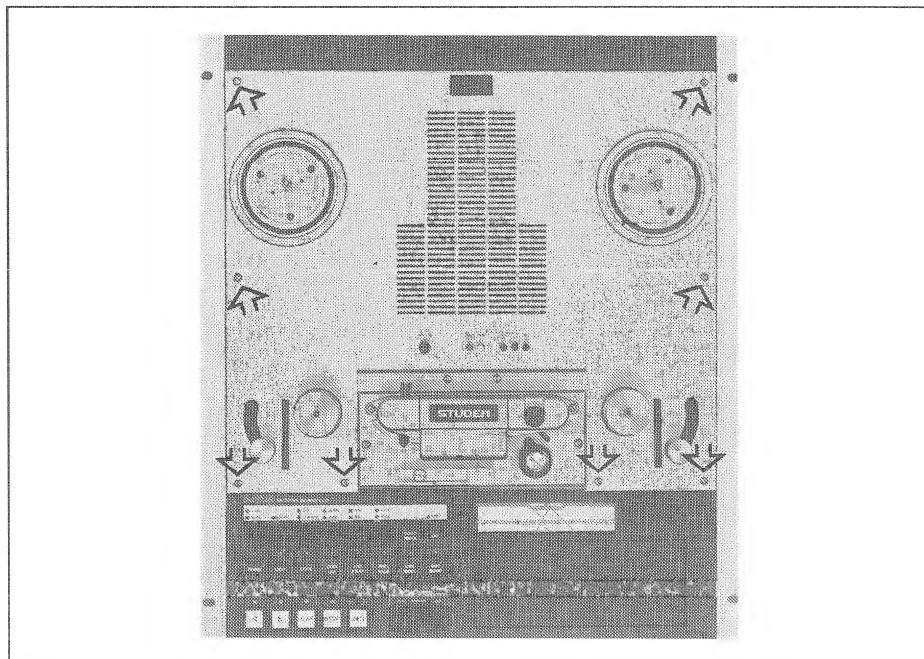


Fig. 3.1.14

- Unfasten 8 screws M4 (hexagon-socket-screw key 2.5 mm)
- Unfasten the two guide rollers (without tool) and remove the roller.
- Lift off the tape deck cover (the head block cover must be removed).

Tape deck cover, bottom

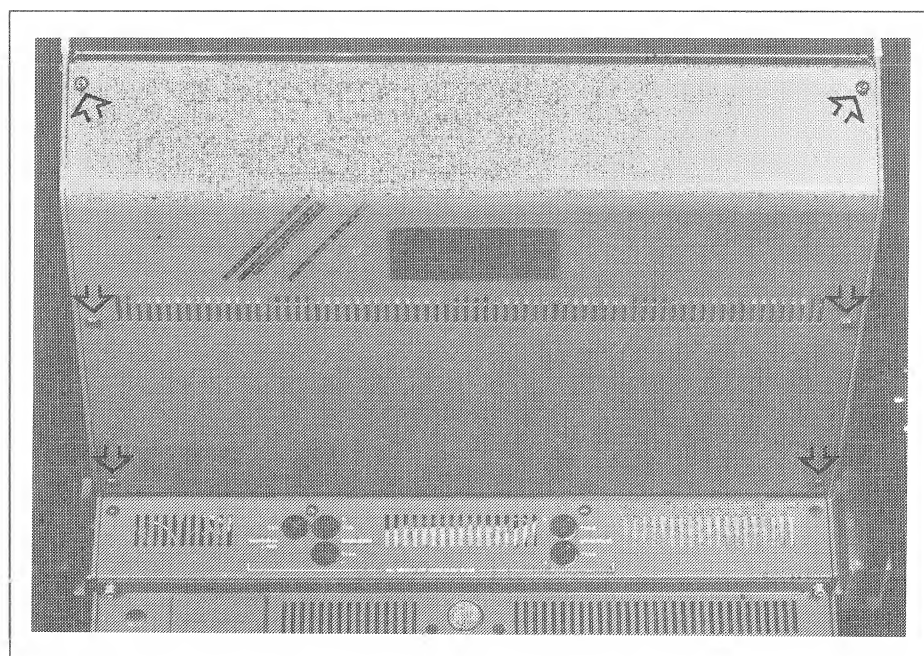


Fig. 3.1.15

- Unfasten 6 screws (hexagon-socket-screw key No. 2.5)
- Remove the cover.

Rear panel

- Unfasten 4 screws (hexagon-socket-screw key No. 2.5).
- Fold down the rear panel.

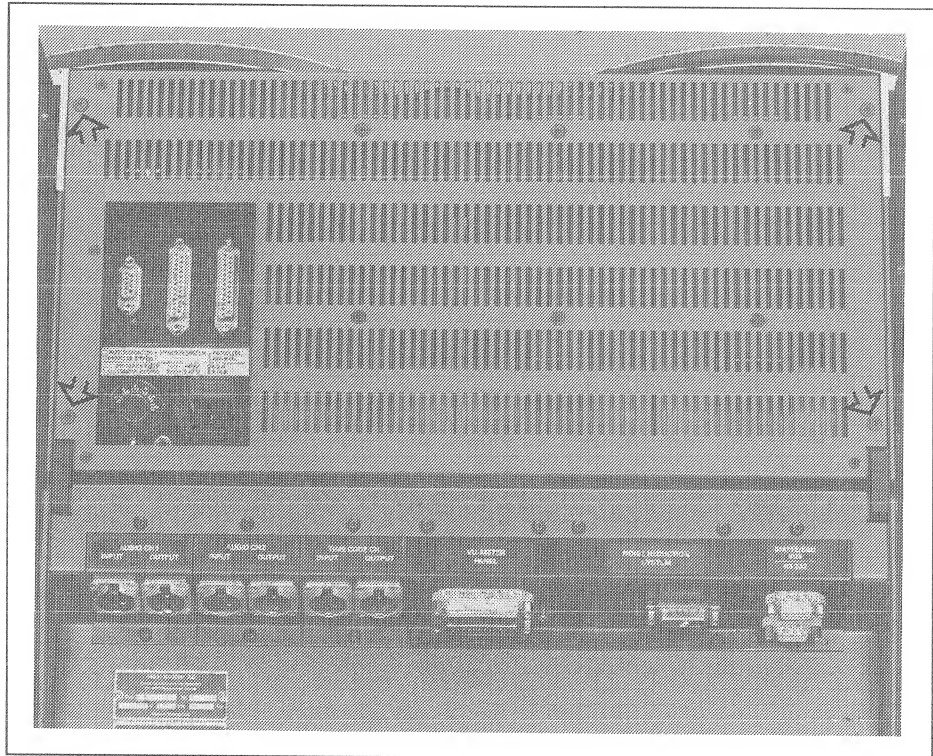


Fig. 3.1.16

Wooden side panels

- Unfasten four screws on each panel (hexagon-socket-screw key No. 4).

3.2.2 Headblock Assembly

- Remove the headblock cover (3.2.1)

Important !! To prevent unwanted magnetization of the soundheads, the tape recorder must be switched on when you remove or install the headblock assembly.

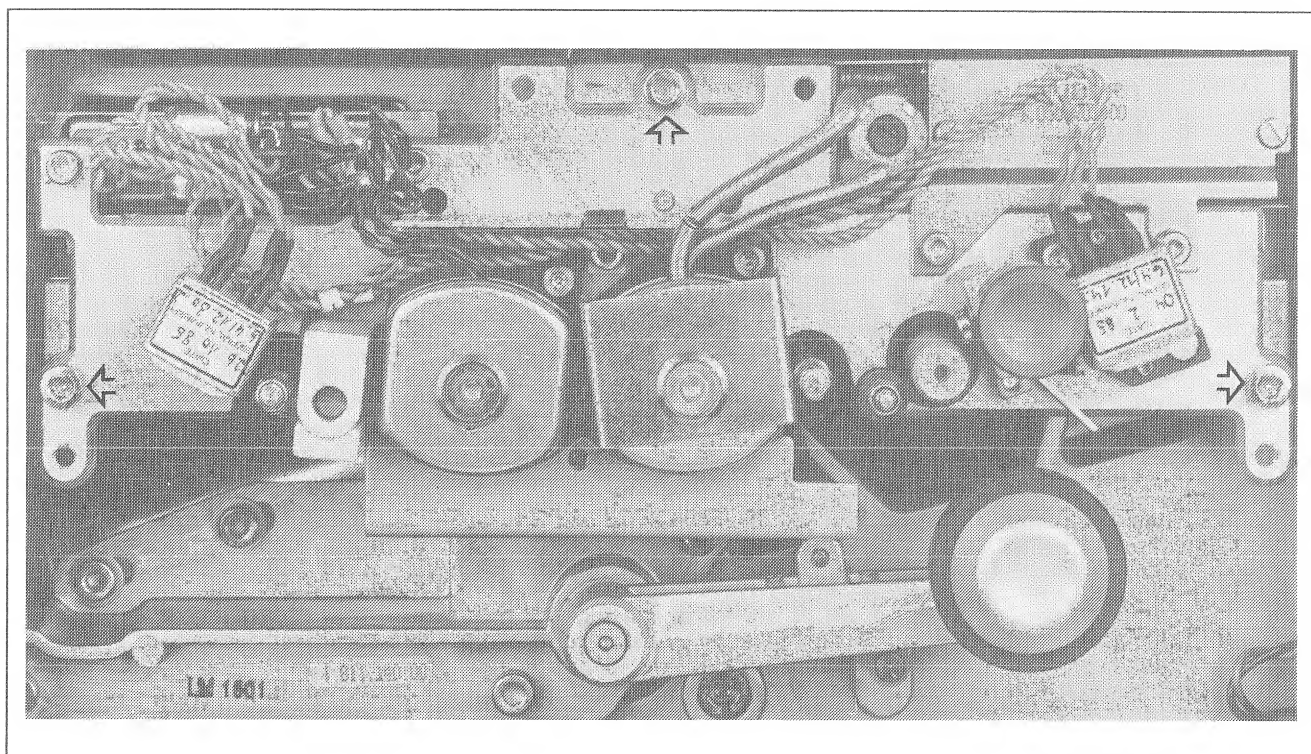


Fig. 3.1.17

- Unfasten three screws M4 (hexagon-socket-screw key 3 mm).
- Carefully slide out the head block so that the capstan shaft does not become damaged.
- Do not turn the headblock upside down, otherwise the three screws drop out.

3.2.3 Tape Tension Sensors

Tape tension sensor, left

- Remove the headblock cover and the tape deck cover (3.2.1).
- Separate the flat cable marked TAPE TENSION LEFT from its connector.
- Unplug two stranded connecting wires (blu, vio) from the EDIT solenoid.

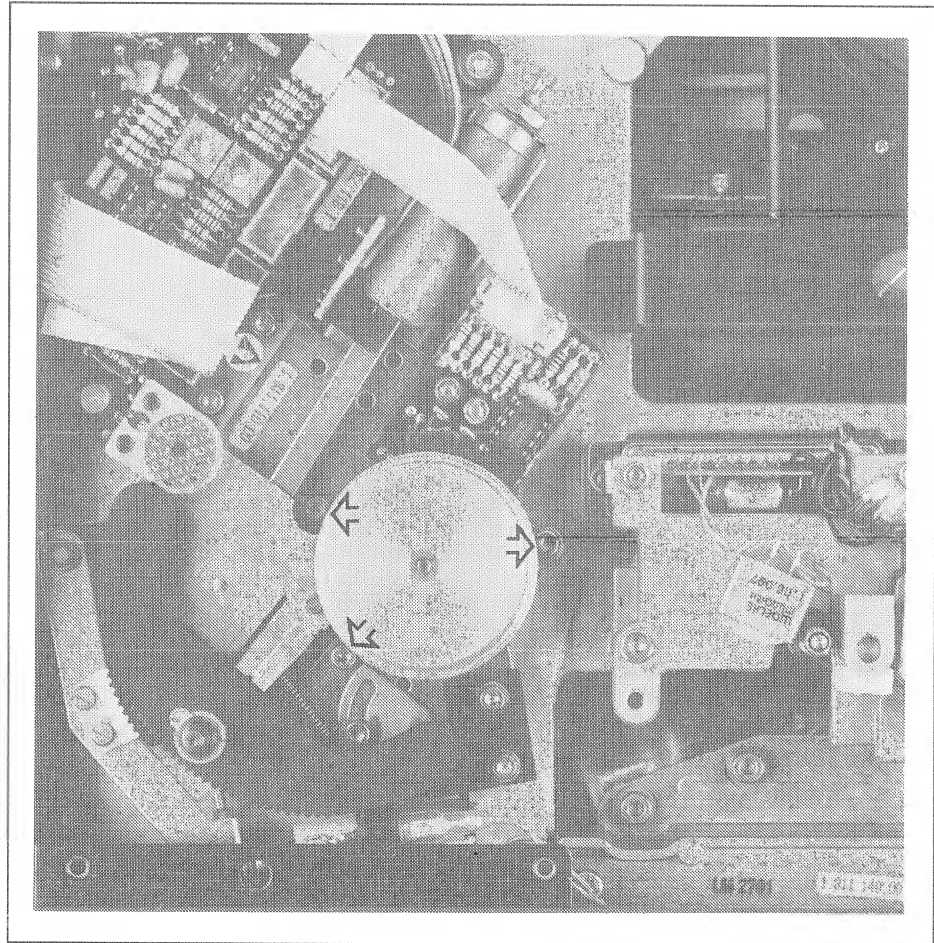


Fig. 3.1.18

- Loosen 1 screw M3 (hexagon-socket-screw key 2 mm) so that the spacer can be shifted.
- Unfasten 3 screws (hexagon-socket-screw key 2.5 mm).
- Remove the tape tension sensor.
- Do not turn the tape tension sensor upside down, otherwise the 3 screws drop out.

When reassembling make sure that the:

- Polarity of the EDIT solenoid is correct (vio = +),
- Flat cable (tape tension left) is plugged in

Tape tension sensor, right

- Separate the flat cable marked TAPE TENSION RIGHT from its connector.
- Unplug two stranded connecting wires (grn, vio) from the EDIT solenoid.

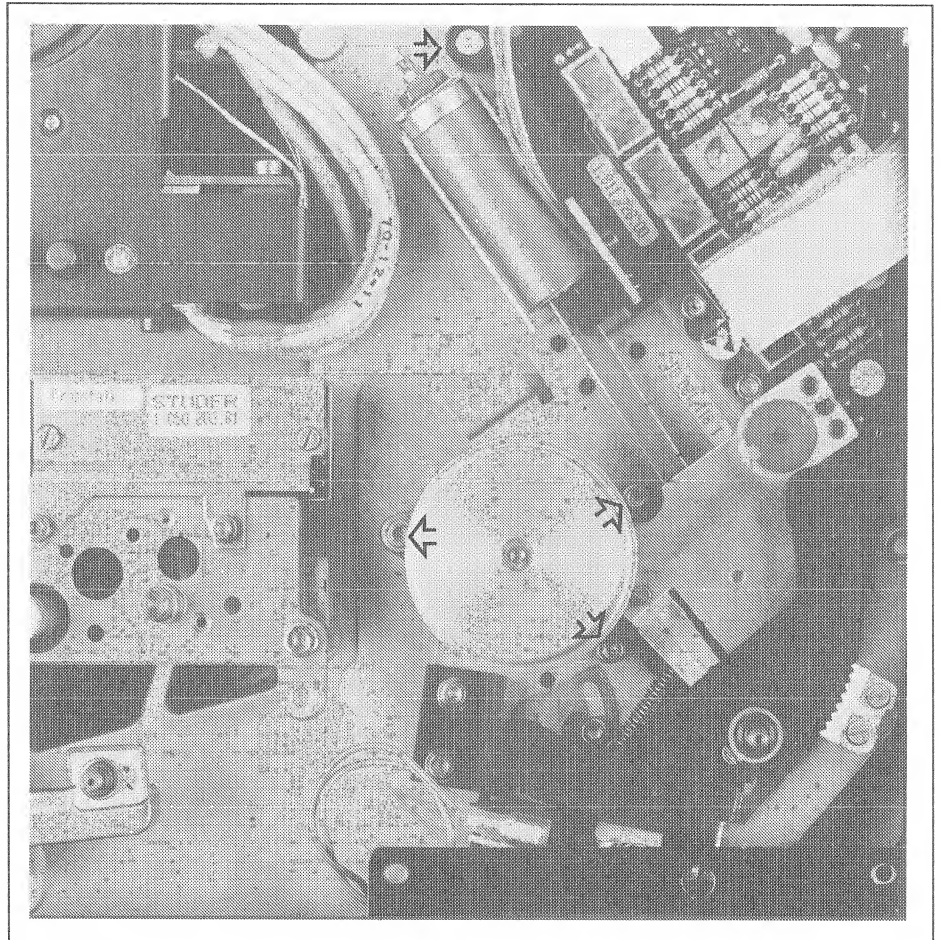


Fig. 3.1.19

- Loosen 1 screw M3 (hexagon-socket-screw key 2 mm) so that the spacer can be shifted.
- Unfasten 3 screws (hexagon-socket-screw key 2.5 mm).
- Remove the tape tension sensor.
- Do not turn the tape tension sensor upside down, otherwise the 3 screws drop out.

When reassembling make sure that the:

- Polarity of the EDIT solenoid is correct (vio = +),

3.2.4 Tape Lifter

Tape lift pin

- Remove the tape deck cover (3.2.1) and the head block (3.2.2).
- Unhook the return spring on the pinch arm.

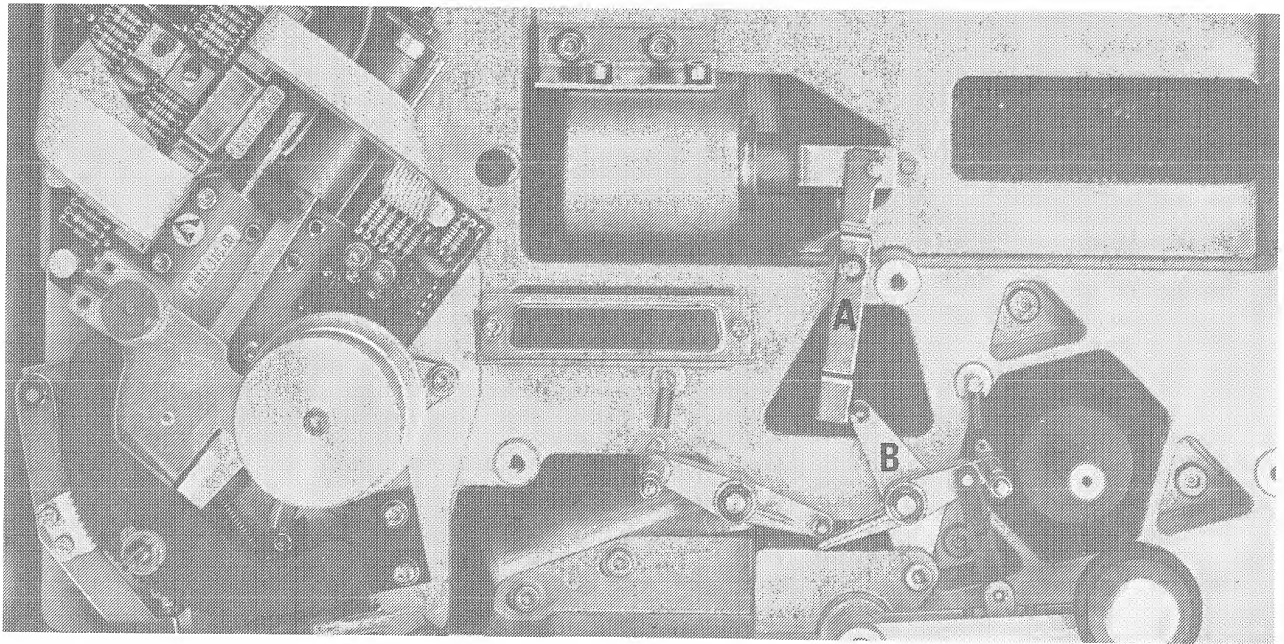


Fig. 3.1.20

- Unhook one return spring each on the left and the right.
- Remove one circlip each from the left-hand and the right-hand tape lift pin.
- Remove the circlip above the black plastic clip and remove the clip toward the top.
- Remove the left-hand and right-hand tape lift pin.
- When reassembling make sure that the coupling pin (A) is located on the left of the roller (B).

Tape lift solenoid

- Remove the monitor module (3.2.11), if configured.

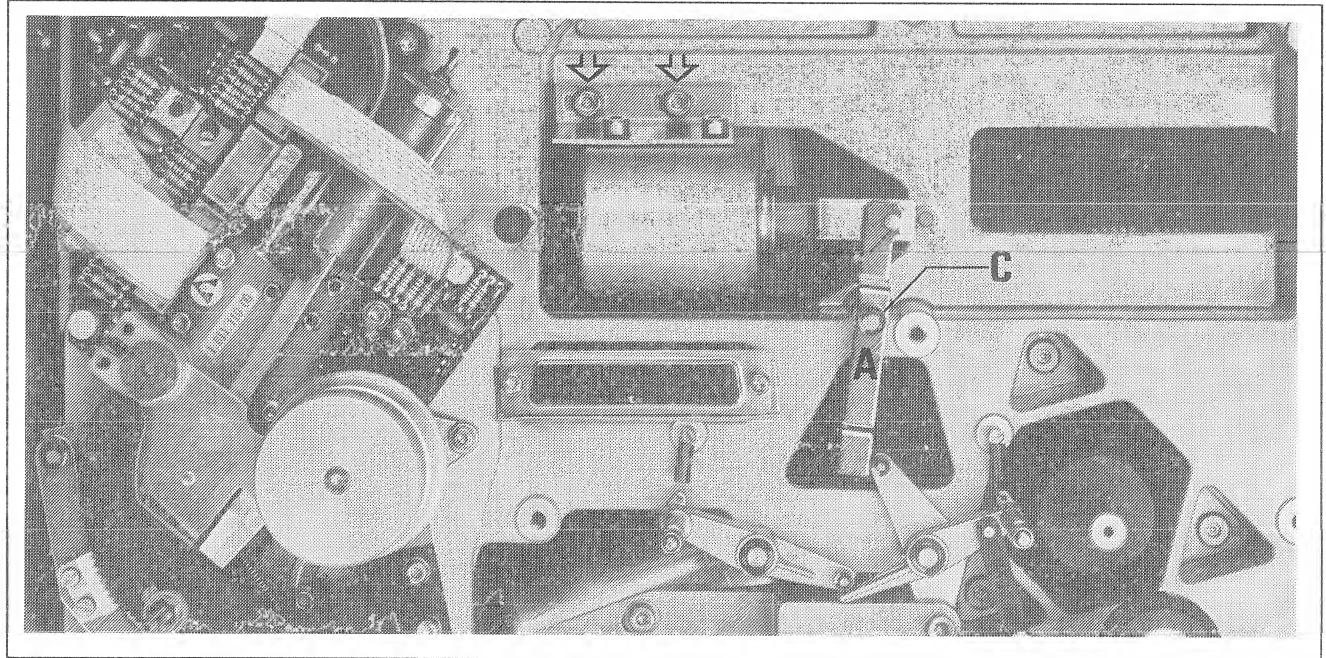


Fig. 3.1.21

- Remove the circlip (C).
- Remove the lever (A).
- Unfasten 2 screws M4 (hexagon-socket-screw key 3 mm), remove the solenoid toward the front. Do not tilt the solenoid, otherwise the armature drops out.
- Unplug two stranded connecting wires (yel, vio).
- When reassembling make sure that the polarity of the connections is correct (vio = +)

3.2.5 Pinch Roller Assembly

- Remove the head block cover, the headblock, and the lower tape deck cover (3.2.1).
- With a forceful jerk pull the circuit board frame on the bottom of the unit out of the snap closures on the left and right. Tilt down the circuit board frame.
- Remove the tape lift pin (3.2.4).
- Unplug the two stranded connecting wires (or, vio) of the pinch roller solenoid.

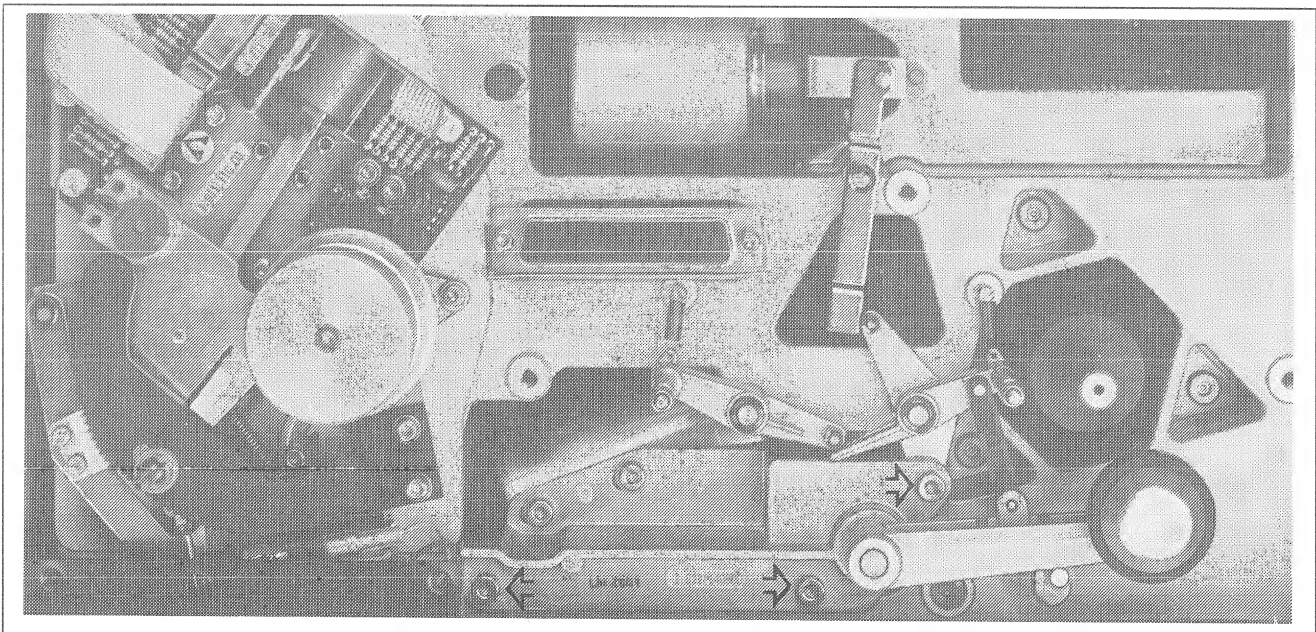


Fig. 3.1.22

- Unfasten 3 screws M4 (hexagon-socket-screw key 3 mm).
- Carefully remove the pinch roller assembly toward the front.

When reassembling make sure that the:

- Pin at the pinch roller arm is engaged in the plastic lips.
- The polarity of the pinch roller solenoid connections is correct (vio = +).
- Return spring on the pinch roller arm is engaged.

3.2.6 Spindle (incl. Brake Roller)

- Remove the upper tape deck cover.
- Release the adapter by pressing against the ring at the edge of the spindle and remove it.
- Unfasten the screw in the center of the spindle ((hexagon-socket-screw key 2.5 mm).
- Gently press against the two brake levers to lift the brakes so that the spindles can be removed without twisting the brake band.

CAUTION! THE HEIGHT OF THE BRAKE DRUM IS SET WITH SHIMS. MAKE SURE THAT THESE SHIMS ARE NOT LOST OR CONFUSED!

NEITHER THE INSIDE OF THE BRAKE BAND NOR THE BRAKE LINING (REDDISH FABRIC) MAY BE TOUCHED WITH UNGLOVED HANDS !!

- When reinstalling make sure that the brake band is not twisted. - Release the band by pressing against the two brake levers !

3.2.7 Tape Brakes

- Remove the tape deck cover (3.2.1)
- Remove the spindle (including brake roller).

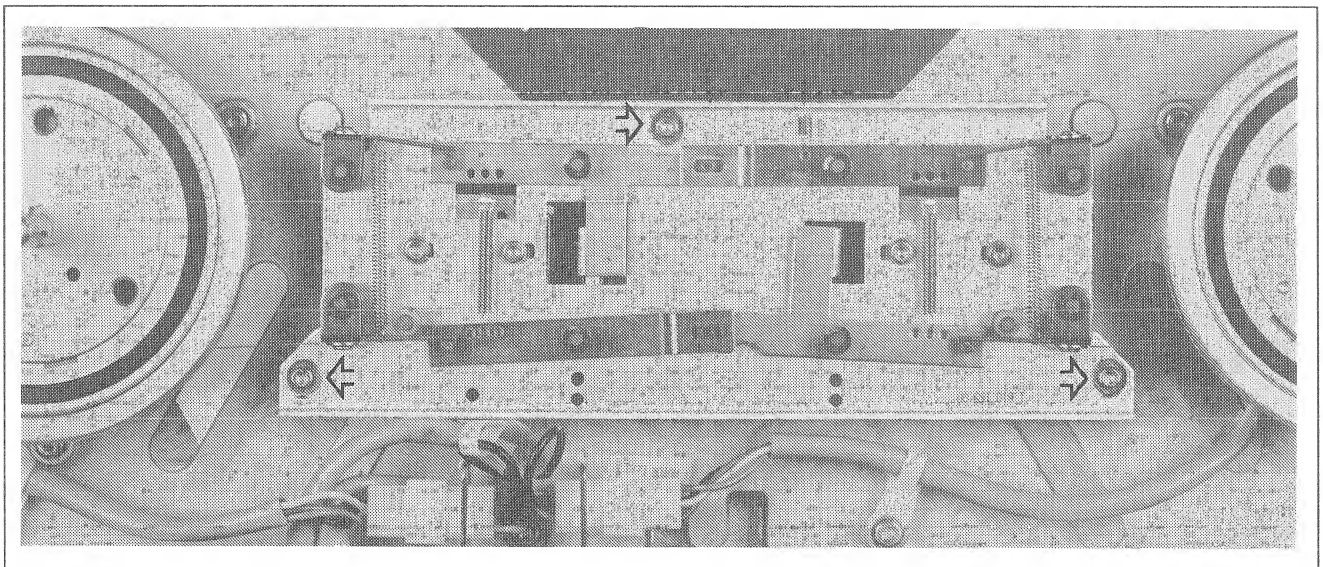


Fig. 3.1.23

- Unfasten 3 screws M3 (hexagon-socket-screw key 2.5 mm).
- Carefully remove the brake chassis toward the top.

Important !! The brake bands should be neither kinked nor the inside be touched with ungloved hands!

Kinked brake bands must be replaced, contaminated brake bands should be cleaned with alcohol!

- Unplug the connections of the EDIT solenoid (white, vio) and the brake solenoid (brn, vio).
- When reassembling make sure that the polarity is correct (vio = +).

Important !! The brakes must be readjusted after the brake chassis has been installed.

3.2.8 Spooling Motors

- Remove the tape deck cover (3.2.1)
- Remove the spindle, including brake roller (3.2.6)
- Remove the brake chassis (3.2.7).
- Unplug the connection cable spooling motor left/right from the socket (Molex) above the brake chassis).

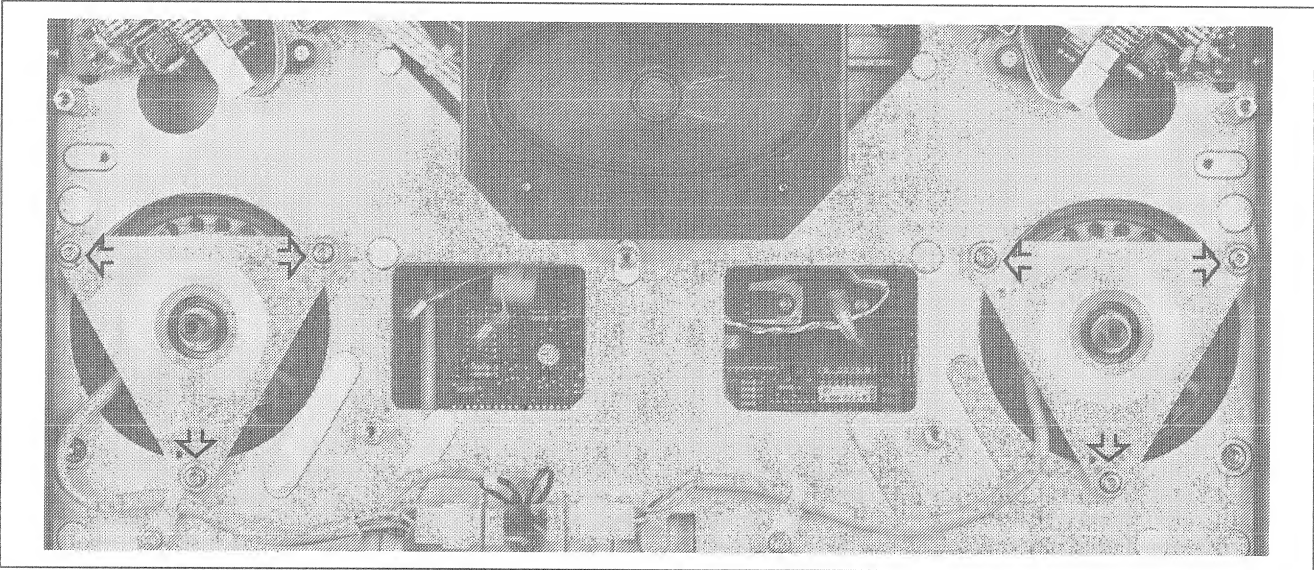


Fig. 3.1.24

- Unfasten 3 screws each M4 (hexagon-socket-screw key 3 mm).
- Carefully lift out the motor toward the top.

3.2.9 Capstan Motor

- Remove the upper and lower tape deck covers.
- Tilt down the tape deck circuit board holder.
- Unplug the multipin connector (MOLEX) on the CAPSTAN MOTOR DRIVE.
- Unfasten three special screws (hexagon-socket-screw key 3 mm) from the top. While unfastening the screws, support the motor from the bottom so that it cannot drop out of the machine.

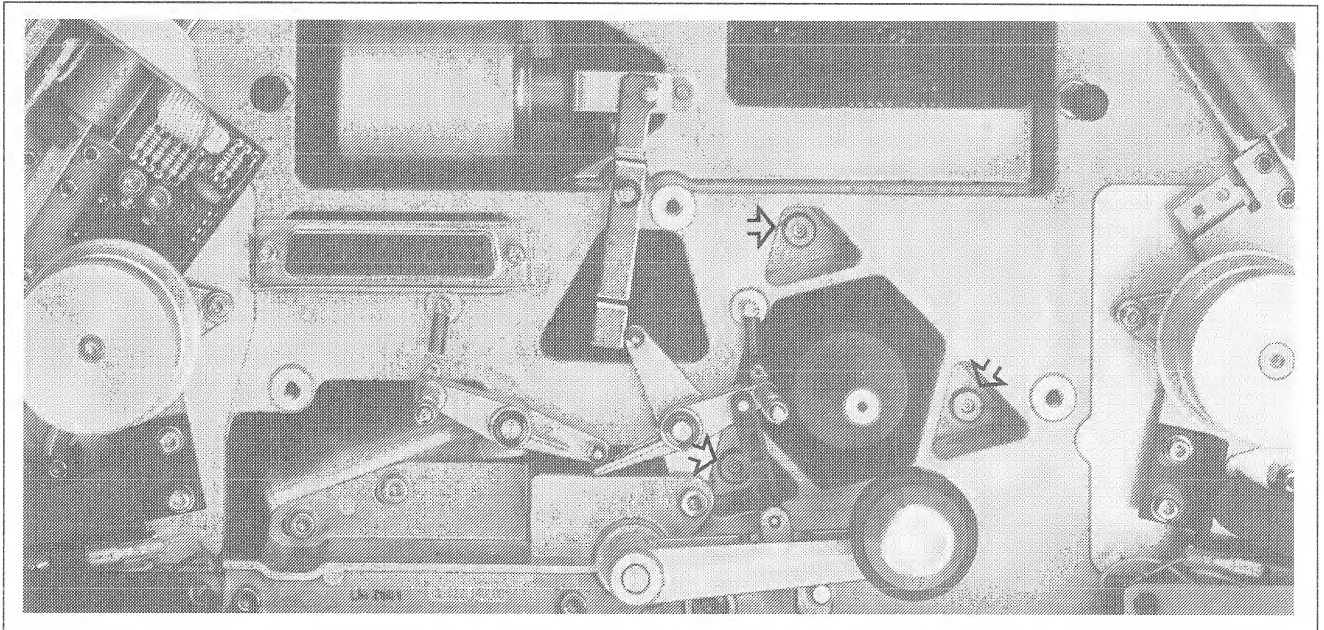


Fig. 3.1.25

3.2.10 Power Supply

- Remove the lower tape deck cover.
- Tilt down the amplifier bay (2 hexagon-socket-head screws No. 3) and remove the power supply cover (7 hexagon-socket-head screws No. 2.5).
- Remove the plastic cover above the power supply.
- Unfasten 3 hexagon-socket-head screws No. 3 on the side of the power supply and one hexagon-socket-head screw No. 2.5.
- Carefully lift out the power supply and secure it with one hand.
- Unplug the 2 multipin connectors (Molex), one Cis connector, and the yellow stranded ground conductor on the power supply.
- Unscrew the power line filter on the right-hand side of the power supply (2 hexagon-socket-head screws No. 2.5).

3.2.11 Spooling Motor Drive Amplifier (2 X) and Switching Stabilizer Boards

- Unfasten the rear panel at the 4 screws (hexagon-socket-screw key No. 2.5) in the corners and swing it down.
- SPOOLING MOTOR DRIVE AMPLIFIER: Unfasten two multipin connectors (Molex) and one flat cable.
- Switching stabilizer: Unplug two multipin connectors (Molex).
- Each of the three modules is secured by two screws (hexagon-socket-screw key No. 2.5) on the rear of the unit.

3.3 Checks, Adjustments

3.3.1 Power Supply

Checking the supply voltages:

- Switch off the machine.
- Remove the CODE READ/WRITE UNIT 1.820.721 and reinstall it via the extender board (1.820.799.00). If the machine is not equipped with a CODE READ/WRITE UNIT, the extender board must nevertheless be installed in the corresponding position.
- Switch on the machine.
- Measure the following voltages on the extender board, relative to ground (TP21):

TP24: $+5.6 \text{ V} \pm 0.1 \text{ V}$ (adjustable with R21 on the SWITCHING STABILIZER PCB 1.820.790)

TP 22: $+15 \text{ V} \pm 0.1 \text{ V}$ (adjustable with R6 on the SWITCHING STABILIZER

TP 23: $-15 \text{ V} \pm 0.1 \text{ V}$ PCB 1.820.790)

To measure the non-adjustable voltages, swing down the rear panel of the machine and measure directly on the SWITCHING STABILIZER PCB 1.820.790, refer to the circuit diagram.

- $+24 \text{ V} \pm 1 \text{ V}$
- $+26 \text{ V} \pm 1 \text{ V}$
- $-26 \text{ V} \pm 1 \text{ V}$
- STABIN+
- STABIN -
- CAPMOT

uncontrolled voltages which range between 30 V, and 63 V, depending on the load of the configuration of the machine.

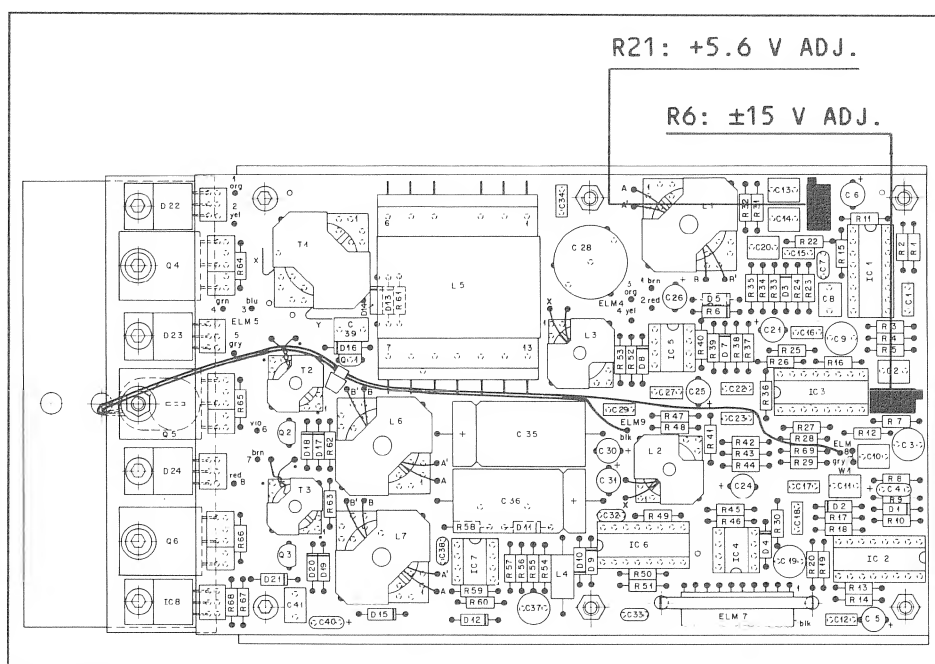


Fig. 3.1.26

Note: The voltages specified above are also available on the 16-pin flat cable connector P11 (ELM12) on the BASIS PCB 1.811.700. For easy tapping, an adapter cable with test points should be used.

Pin assignment of the connector P11 (ELM12):

- Pin 1, 2: CAPMOT
- Pin 4: +24 V
- Pin 5: STABIN-
- Pin 7, 8: STABIN+
- Pin 9, 10: +5.6 V
- Pin 11, 12: 0.0 V
- Pin 13: -15 V
- Pin 14: +15 V
- Pin 15: +26 V
- Pin 16: -26 V

The connector P11 is pin compatible with the FUSE/SUPPLY FAILURE DETECTOR PCB 1.820.737 of the STUDER A820. For this reason it is possible to use this board for measuring purposes.

Pin assignment ...

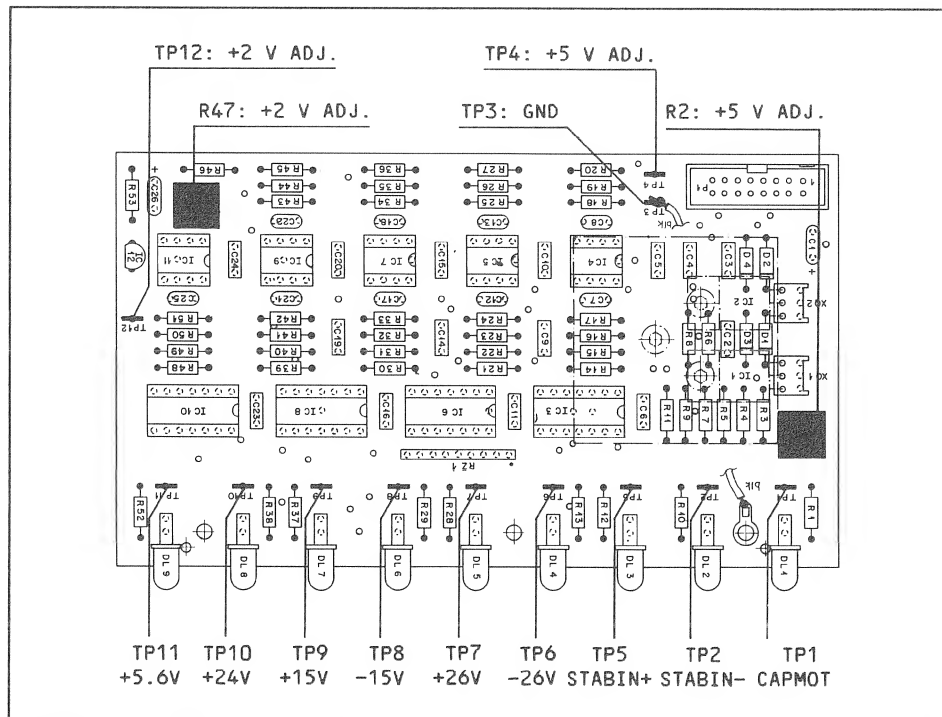


Fig. 3.1.27 (A820 Fuse/Supply Failure Detector 1.820.737)

3.3.2 Move Sensor (Tape Move Sensor)

Checking the TTL signals:

SIGNAL-NAME	CLOCKWISE-ROTATION	COUNTERCLOCK-: WISE ROTATION	MOVE SENSOR PCB
T-CLK1L			TP3 or pin 7 on the connector (GND=TP1)
T-CLK2L			TP2 or pin 8 on the connector (GND=TP2)

Fig. 3.1.28

64 Pulses per second at 15 ips ($t = 15.6 \text{ ms}$)

Checking the tape timer:

The tape timer should increment and decrement correctly at all tape speeds.

Brake the left-hand guide roller by hand. The tape timer should not advance, the machine should switch to STOP.

The error message TACHO ERROR appears on the LC display.

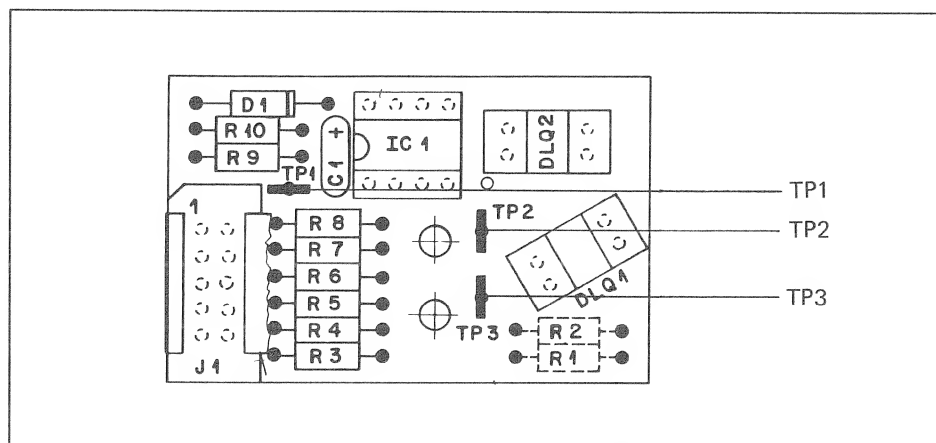


Fig. 3.1.29

Exchanging the light barriers DLQ1 and DLQ2

After one of these two light barriers has been replaced, the signals T-CLK1L and T-CLK2L must be checked according to the above diagram. If the required phase relation between the two signals is not achieved, one of the two light barriers must be adjusted (unsoldering, lightly rotating and resoldering) until the desired phasing is achieved. The location of the entire TAPE MOVE SENSOR also influences the phasing, however to a lesser degree. This may also have to be taken into consideration.

3.3.3 Mechanical Brakes

Improperly serviced or unprofessionally adjusted brakes can cause the tape to tangle or to tear. Check in regular intervals that the brakes act smoothly and that no loops are formed even when the difference in the tape pancake diameters is very large. Brake bands should be checked for wear and contamination.

The tape brakes are self-regulating: even if the friction coefficient changes, the braking force remains constant across wide ranges.

Preparatory steps:

Remove the tape deck cover; unplug the 3-pin tape end sensor connector on the left-hand tape tension sensor.

The brake bands and brake linings must be absolutely clean and free of grease. Contaminated brake bands and brake linings can be cleaned with alcohol. Make sure that they are no longer touched with ungloved hands after they have been cleaned.

The brake bands should not have any kinks and contact the full width of the brake lining.

When replacing the brake drum make sure that there is no residual adhesive on the brake drum.

If the braking force is too weak after the brake bands have been replaced, they can be lightly roughened with a SCOTCH "pot cleaner".

To adjust the brake delay, the brake springs can be fastened in three different positions each. Refer to the illustration below with the springs [A] in the maximum setting, springs [B] in the medium setting.

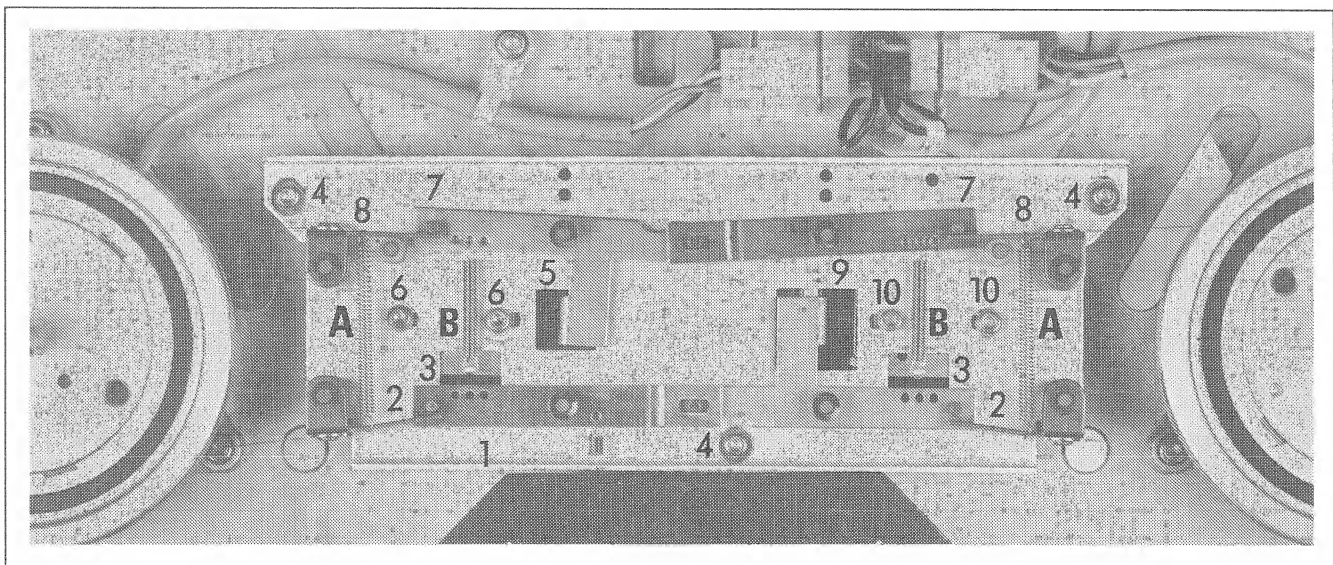


Fig. 3.1.30

Basic adjustment of the brake chassis

- Switch off the tape recorder.
- Shift the brake chassis [1] in such a way that the distance between the two brake levers [2] and the tape lift pin [3] is approx. 1 mm.
- Secure the adjustment with three hexagon-socket-head screws [4] (2.5 mm).
- Make sure that the brake chassis is only shifted in parallel.
- Switch on the tape recorder.
- Check that the two brake systems are released simultaneously by the lifting pins. If this is not the case, check that the spooling motors are positioned correctly. If minor differences still occur, this can be corrected by lightly bending the levers [2].

Adjusting the EDIT solenoid

- In order to adjust the EDIT solenoid [5] it must be energized: connect the machine to the AC outlet and switch it on.
- Shift the two mounting screws [6] (hexagon-socket-screw key No. 2.5) of the magnet [5] in such a way that a gap of approx. 1 mm is created between the tape lift pin [7] and the brake lever [8]. The lever [2] should contact the pin [3].
- Retighten both fixing screws [6].

Adjusting the brake solenoid

- On the right-hand tape tension sensor also unplug the 3-pin connector.
- Select TAPE DUMP or TAPE DUMP and PLAY, depending on which of the four TAPE DUMP functions A, B, C or D is programmed.
- Unfasten the two fixing screws [10] (hexagon-socket-screw key No. 2.5) of the brake solenoid [9] and shift it in such a way that the end of the lever [2] has a travel of 2-3 mm between the neutral position and the released brake.
- Retighten the two fixing screws.

When the brake system is released, the two spooling motors should rotate without binding. Both brake levers should lift in parallel.

- The correct functioning of the brakes can be checked by briefly turning the spindles forward and backward (power switch off).

Measurement the braking torques

- Switch on the recorder (the 3-pin connectors of the left-hand and right-hand tape tension sensors are still disconnected).
- Mount an empty reel with a core diameter of approx. 100 mm and with 2 to 3 m of tape in the take-up direction.
- Hook a spring dynamometer into the leading end of the tape and pull it smoothly forward (direction of arrow).

The EDIT braking torque in the take-up and supply direction should be 0.8 to 1.1 N (80 to 110 p). The torque can be corrected with spring [A].

- To measure the braking torque the 3-pin connectors of the tape-end sensor must be reinserted.
- The tape tension sensors should be in their neutral position.

The braking torque in the take-up direction should be 2.6 to 3.2 N (260 to 320 p). The braking torque difference between the left-hand and right-hand side should not exceed 0.5 N (50 p).

Correction: with spring [B].

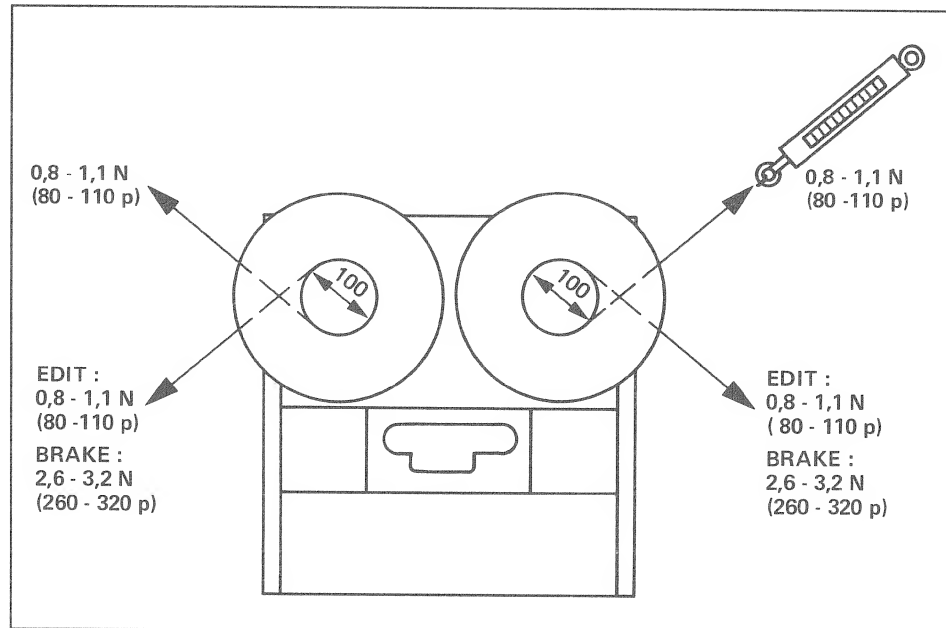


Fig. 3.1.31

3.3.4 Tape Tension Sensor

NOTE:

The illustrations relate to the left-hand tape tension sensor.

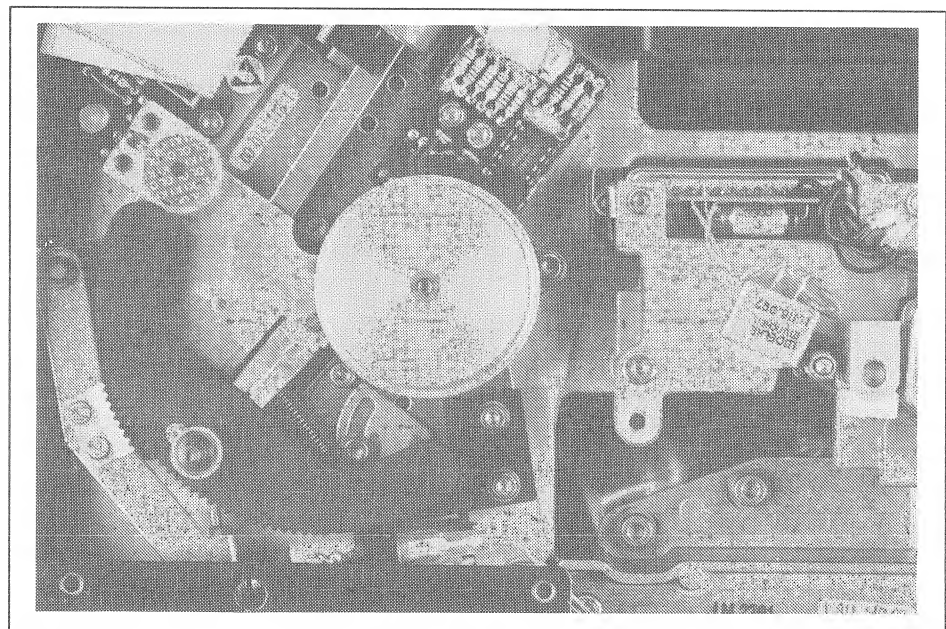


Fig. 3.1.32

Mechanical function check

Mobility of bearings and dashpot:

- Move the tape tension sensor manually from the neutral position to the maximum deflection point. No grinding or rattling noises should be audible. The screening plate should not scrape against any parts; the tape tension and the stop spring should not touch any other parts.

Damping:

- Check the smooth and immediately effective damping in the winding direction, also the function of the nonreturn valve in the pump piston.
- After the dashpot has been replaced, the damping requires no adjustment because this element has been adjusted by the factory.

Important !!

- When installing the dashpot make sure that the cylinder bottom is not twisted!

Checking the tape transport:

- With installed tape tension sensor and threaded tape in PLAY mode, visually check the tape transport (height adjustment) at the idler roller and the small guide roller.

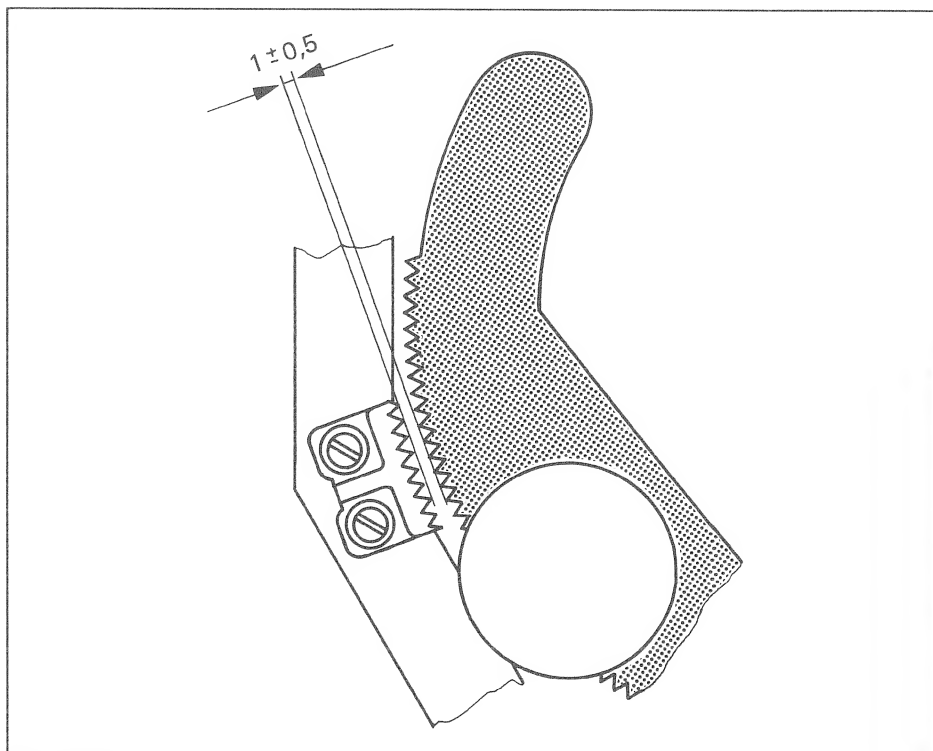
Adjusting the EDIT solenoid

Fig. 3.1.33

- With the EDIT solenoid in the neutral position, the toothed section must be adjusted in such a way that the teeth mesh completely and parallel with those of the toothed disk (slot cover).
- The distance of the tip of the teeth on the toothed section should be 1 ± 0.5 mm throughout the entire deflection range of the tape tension sensor.

Important !! The solenoid should always be shifted parallel to the base plate!

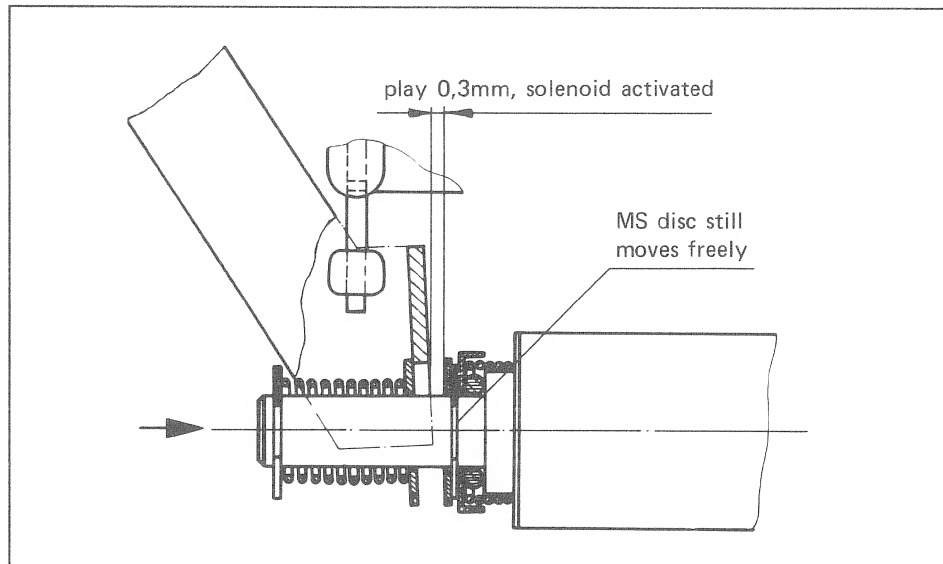


Fig. 3.1.34

- Push the armature with your finger in the direction of the arrow.
- Unfasten the two screws (hexagon-socket-screw key No. 2.5) of the solenoid holder and shift the magnet in parallel so that the brass disc is still freely movable (corresponds approx. to the play specified in Fig. 3.3.9).
- Tighten the two screws and secure them laterally with locking paint.

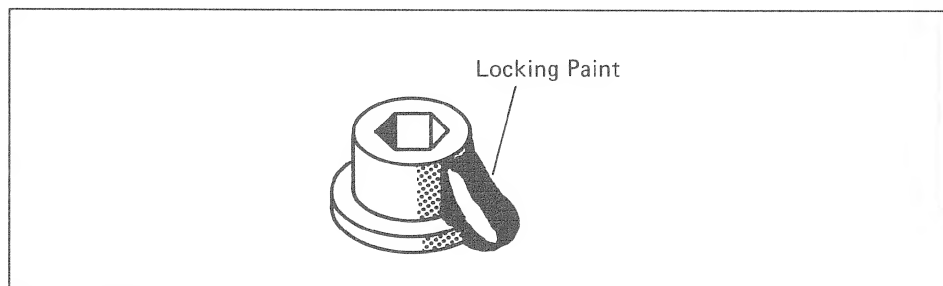


Fig. 3.1.35

Adjusting the tape tension spring:

- Switch off the tape recorder. Remove the tape deck cover.
- Mount the guide rollers (without cover). Hook the spring dynamometer to the shaft and pull parallel to the lateral edge of the tape recorder.
- The force of the tape tension spring is adjusted with the tensioner [A]. It should be noted that the value for the left-hand tape tension sensor is to be set to $0.9 \text{ N} \pm 0.1 \text{ N}$ ($90 \text{ p} \pm 10 \text{ p}$) and for the right-hand tape tension sensor to $1.1 \text{ N} \pm 0.1 \text{ N}$ ($110 \text{ p} \pm 10 \text{ p}$) with a tape tension sensor deflection of -15° , or a distance of 45 mm between the top edge of the front panel and the bottom edge of the guide roller.
- A ruler or the B67 tape tension alignment gauge, part No. 10.044.001.00 can be used.

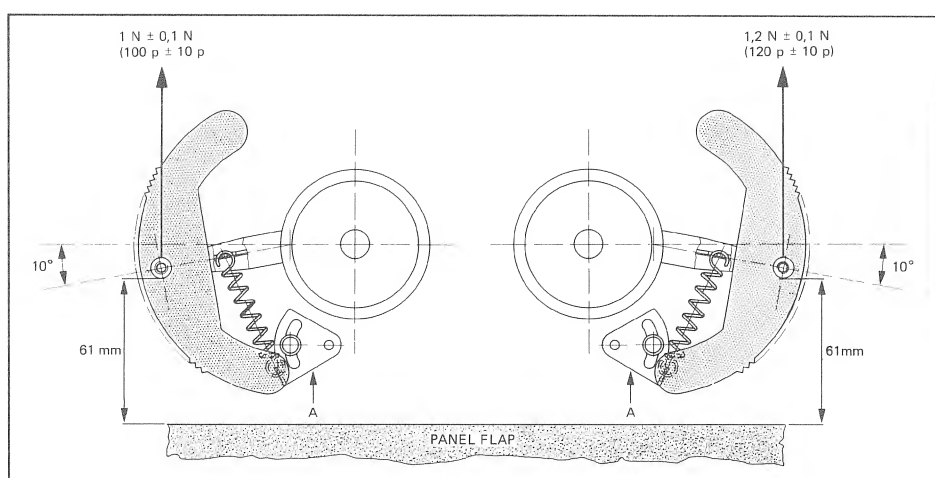


Fig. 3.1.36

Important !! Due to the hysteresis of the spring dynamometer, the measurement should only be made in the tensioning direction.

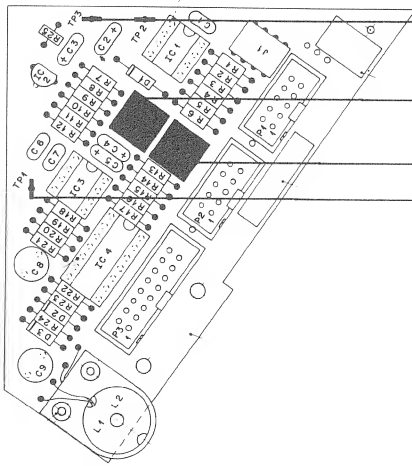
- After the adjustment has been completed, tighten the adjustment screw of the tensioner [A] and secure it with locking paint.

Tape tension sensor PCB

Adjusting the offset and the gain of the TAPE TENSION SENSOR PCB

- Connect the digital voltmeter to the two test points TP1 (AN-TTL/R) and TP3 (ground).
- Neutral position (without tape): Align the offset with R27 on both TAPE TENSION SENSOR PCBs to $0.000\text{ V} \pm 0.005\text{ V}$.
- Deflect the tape tension sensor to $+20^\circ$ or a distance of 64 mm between the top edge of the front panel and the bottom edge of the guide roller; align the gain with R26 on the two TAPE TENSION SENSOR PCBs to $4.000\text{ V} \pm 0.005\text{ V}$.

1.811.730



1.811.728

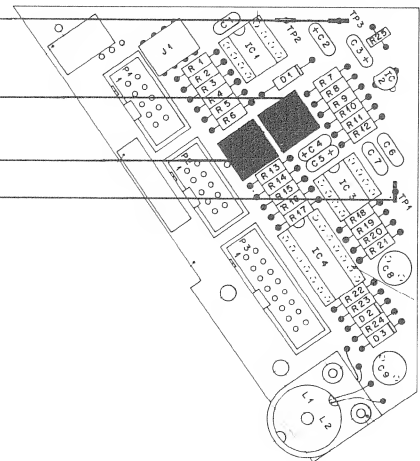


Fig. 3.1.37

- After this alignment secure each potentiometer with a drop of locking paint, diam. approx. 2 mm.

Important !! Leave the slots of the trimmer potentiometers open!

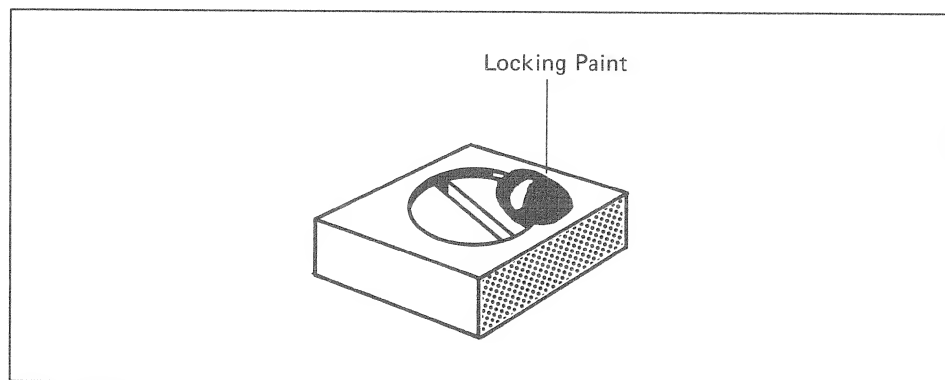


Fig. 3.1.38

Adjusting the dashpot

The dashpot cannot be adjusted "in the field" due to the lack of alignment gauges. Suitable gauges are in development. If the dashpot does not provide smooth and immediately acting damping, it should be replaced. Replacement dashpots require no adjustment because they are factory-adjusted to the correct value.

3.3.5 Tape end Sensor

(PCB at the dash pot)

Mechanical adjustment:

- Switch on the tape recorder.
- Deflect the arm of the tape tension sensor by approx. 2 to 2.5 mm from the stop position, and adjust the TAPE END SENSOR PCB in such a way that the T-TENDL signal (left-hand tape tension sensor, TP2) and the T-TENDR signal (right-hand tape tension sensor) just switch to logical 1 (HIGH); TP3 = ground).

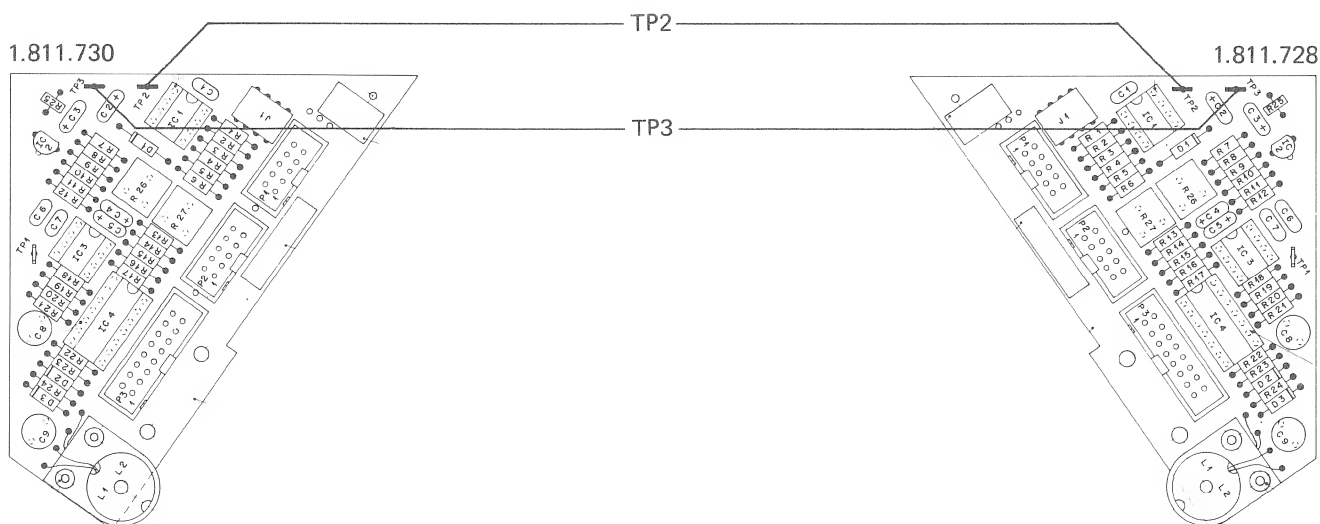


Fig. 3.1.39

- Pretension the arm with the spring dynamometer ($10\text{ N} \pm 1\text{ N}$ or $1\text{ kp} \pm 100\text{ p}$). The T-TENDL/R signal should always remain logical 0 (LOW).
- Tighten the adjustment screw and secure the locking paint.
- Reinstall the guide rollers.

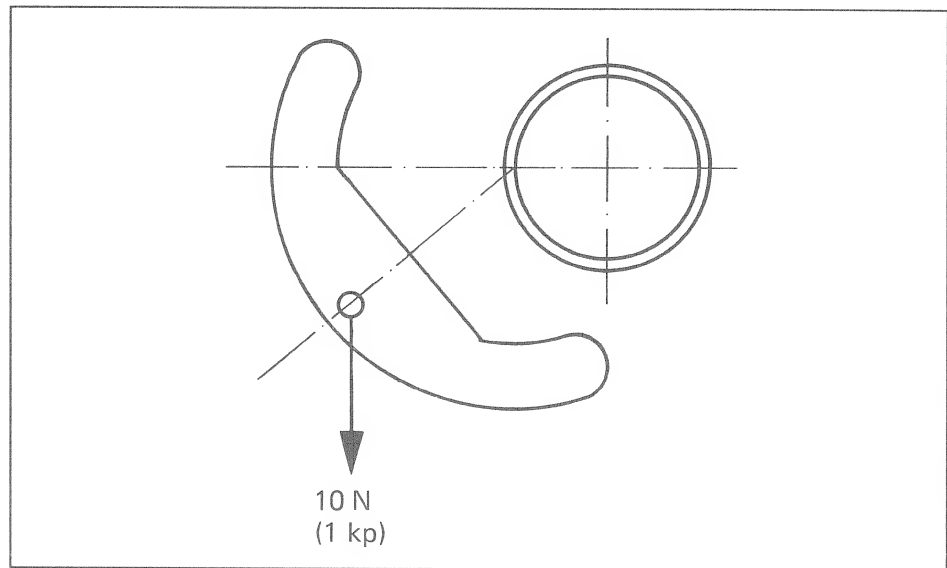


Fig. 3.1.40

Function check:

- Switch on the tape recorder, tape deck in STOP mode, both tape tension sensors in neutral position. The EDIT solenoid of the brake chassis should drop out, the STOP control lamp should flash for approx. 10 seconds.
- Deflect the tape tension sensor from the neutral position. The EDIT solenoid of the brake chassis and the EDIT solenoid of the left-hand tape tension sensor should pick up.
- Restore the tape tension sensor to the neutral position and repeat the same check with the right-hand tape tension sensor.

3.3.6 Pinch Roller Assembly

The pinch roller arm is actuated by an electromagnet. The pinching force is determined by the built-in spring.

Adjusting the pinching force:

- Switch off the tape recorder.
- Remove the tape transport cover.
- Reinstall the pinch roller (without cover)
- Separate the 3-pin connectors at the two TAPE TENSION SENSOR PCBs.
- Hook the spring dynamometer 0...20 N (0...2 kp) to the thread of the pinch roller shaft.
- Switch on the tape recorder.

- Select TAPE DUMP or TAPE DUMP and PLAY (depending on which of the four TAPE DUMP functions, A, B, C or D, is programmed).
- Pull the spring dynamometer at a right angle to the pinch roller arm so that the pinch roller lifts off the capstan shaft.
- The spring dynamometer should give a reading of 8...10 N (800.... 1000 p).
- If the reading is higher or lower than the desired value, unfasten the two fixing screws of the pinch roller solenoid (hexagon-socket-screw key No. 3) and shift the pinch roller solenoid in such a way that the nominal value is achieved.,
- Retighten the fixing screws.
- Make sure that the arm returns smoothly to the neutral position, otherwise the solenoid is twisted.

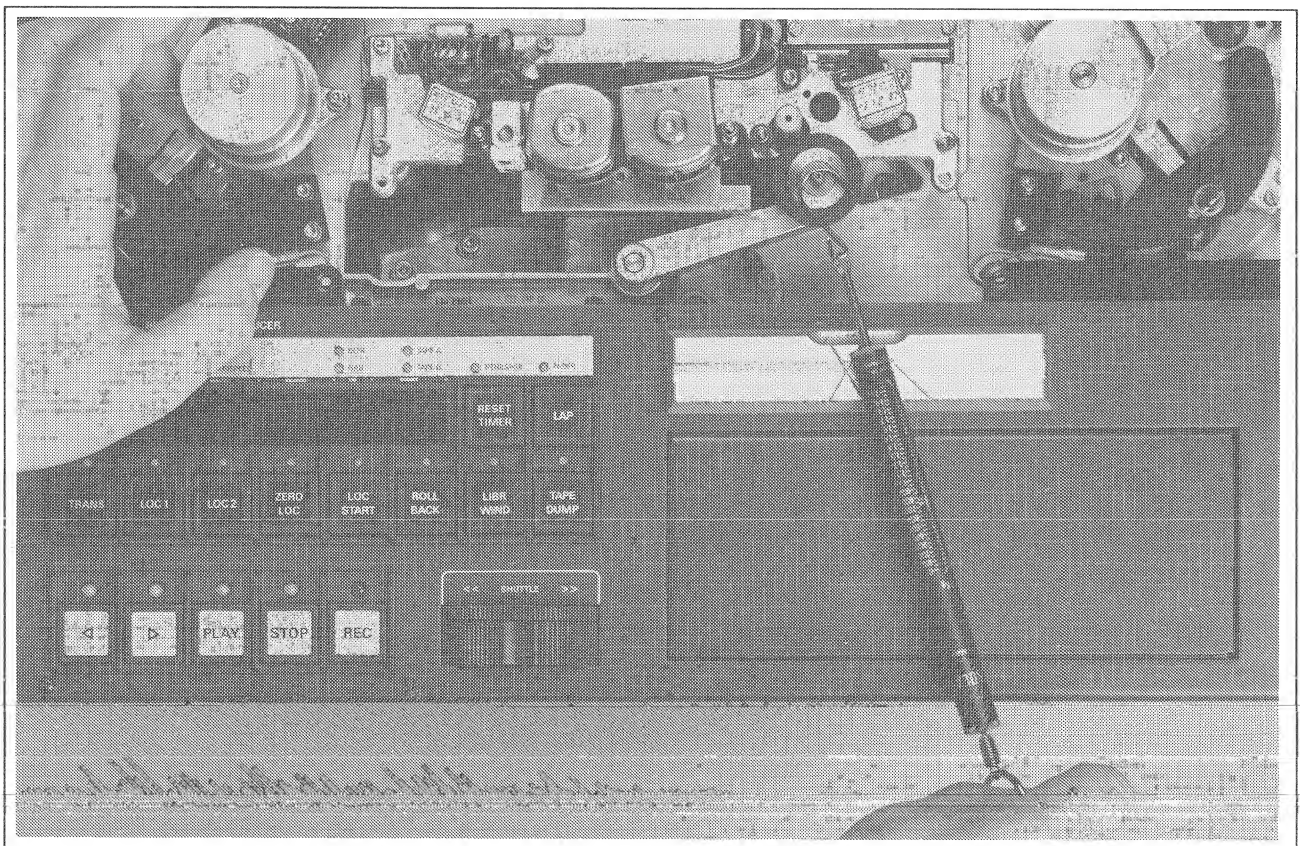


Fig. 3.1.41

- Checks:**
- With your index finger lightly push the pinch roller toward the capstan shaft so that the pinch roller just makes contact with the capstan shaft.
 - Press TAPE DUMP or TAPE DUMP and PLAY (depending on which of the four TAPE DUMP functions, A, B, C or D, is programmed). The pinch roller arm should again visibly move toward the capstan shaft. This ensures that the pinch roller solenoid deflects completely and that only the tension spring in the solenoid armature establishes the coupling between the pinch roller arm and the armature (no mechanical contact).
 - Check this visible travel by actuating STOP and PLAY (or STOP and TAPE DUMP, depending on which of the four TAPE DUMP functions A, B, C, or D, is programmed). If no play can be felt, the pinching force must be increased.

3.3.7 Tape Lifter

In spooling mode the two tape lift pins are moved by the tape lift solenoids in such a way that the tape is lifted off the soundhead face. This prevents unnecessary wear on the soundheads.

Preparatory steps:

- Switch off the tape recorder.
- Remove the tape deck cover.

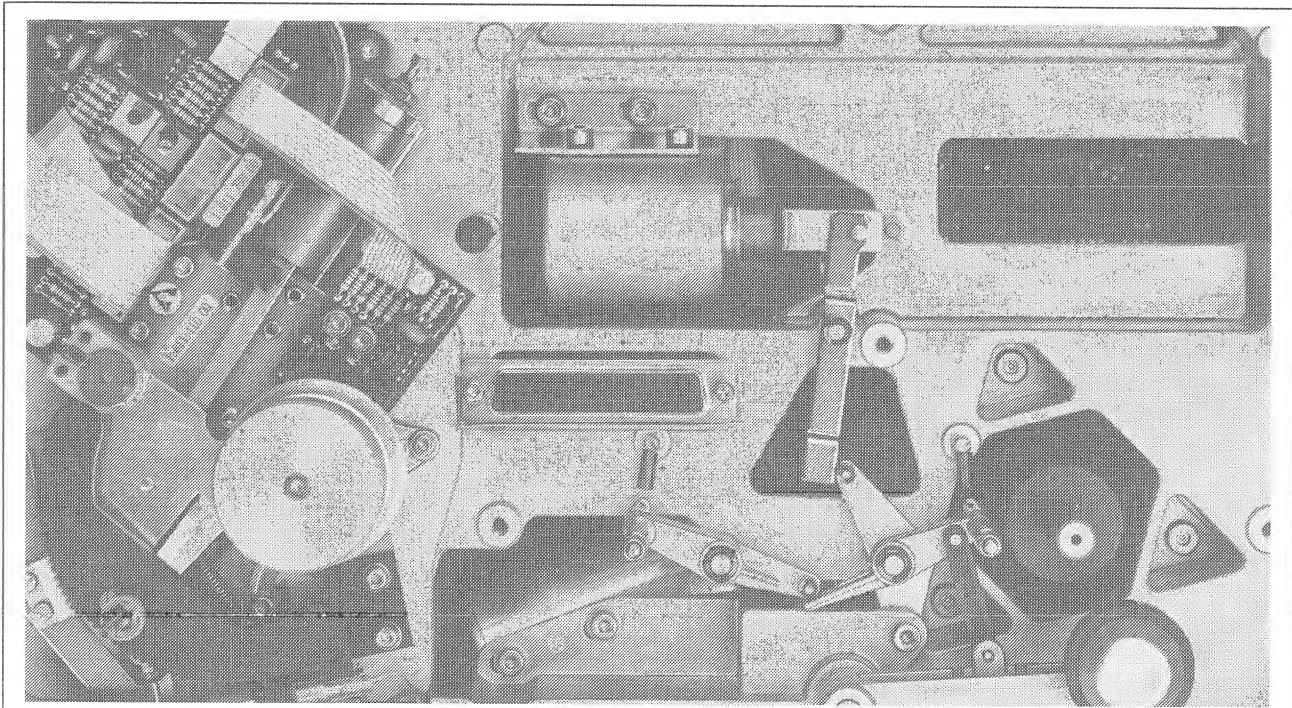


Fig. 3.1.42

Adjusting the tape lift solenoid

- Mount a tape, switch on the tape recorder.
- Adjust the tape lift solenoid in such a way that the tape is lifted off the record head by approx. 1 to 1.5 mm in spooling mode.
- Press STOP and manually check that the armature moves without binding; if necessary unfasten one of the fixing screws of the tape lift solenoid and lightly rotate the solenoid until the armature moves without binding.
- Retighten the fixing screw.

3.3.8 Tape Tension

Control measurement:

The tape tensions are measured with a spring dynamometer (part No. 10.300.001.01) which must be calibrated to 1.0 N (100 p) with 1/4" tape of the actual type used. The measurement with the spring dynamometer is to be performed between the reel and the tape tension sensor. The tape must run in the center and at a right angle across the spring dynamometer. To permit unhindered access to the tape, the tape deck cover may possibly have to be removed, depending on the type of the spring dynamometer available.

- Switch on the tape recorder, select the 15 ips tape speed as well as the corresponding tape type (the tape tension values are also switched over when the tape type is changed!).
- Mount the tape and spool forward until the pancake diameter of both reels is identical.

PLAY tape tension:

The values specified in the table below must be achieved. If the pinch roller is lifted lightly off the tape, the reels should come to a standstill within one full rotation, and the LC display should show the following information:

ERR:	TACHO SENSOR
------	-----------------

(After the pinch roller has been released, this message disappears again).

PLAY tape tensions:	left: 0.6...0.7 N (60...70 p) right: 0.8...0.9 N (80...90 p)
IMPORTANT:	The difference between the left and the right tape tension should be 0.2 N (20 p).

Adjusting the PLAY tape tension:

- Switch on the recorder, select the 15 ips tape speed as well as the corresponding tape type (the tape tension values are also changed over when the tape type is changed!).
- Mount the tape and spool it forward until the diameter of the tape pancake of both reels is identical.
- Open the programming lock [28] (hexagon-socket-screw key No. 2.5, approx. 1 counterclockwise turn).

- Starting with the display "L RANGE ./ dBm", press V/NEXT twice and >/CURSOR once, then V/NEXT four times in order to set the PLAY tape tension. The LC display shows:

T TENS PLAY	1/4" A
LEFT 8A	RIGHT 8A

- Changeover right/left with >/CURSOR and </CURSOR (indication on LC display).
- The selected tape type is also displayed (upper right corner of the LC display), the changeover is initiated by simultaneously pressing STOP and TAPE A/TAPE B.
- Select PLAY.
- With the UP and DOWN keys adjust the two tape tension sensors to a deflection of -15° (or a distance of 45 mm between the top edge of the front panel and the bottom edge of the guide roller).
- Press STORE after each adjustment.
- Repetitively press ^/LAST until "L RANGE ./ dBm" appears on the LC display.
- Measure the tape tension. If the tape tension values specified above are not attained, readjust the tape tension spring (see Section 3.3.4). If the tape tension spring is adjusted correctly but the specified tape tension values are not attained, these values must be achieved by lightly adjusting the tape tension spring with the tensioner [A].
- After these adjustments have been made, tighten the fixing screws of the tensioner [A] and secure it with a drop of locking paint.

Note: TAPE TENSION WIND remains at 70 hex (default hex value).

3.3.9 Shuttle Wheel

Checking the neutral position:

Prerequisite:

The SHUTTLE wheel returns mechanically correctly to the neutral position for both directions!

- Remove the front panel (5 x hexagon-socket-head screws 2 mm).
- Thread the tape, and switch on the recorder.
- Check that the "dead" play of the SHUTTLE wheel is symmetrical relative to the neutral position.
- For this purpose connect a digital multimeter (range 10 VDC, display accuracy at least 2 positions after the decimal point!) to the SHUTTLE potentiometer (+ = red stranded wire, ground = brown stranded wire).
- Deflect the SHUTTLE wheel to the right. As soon as the tape starts to move, write down the voltage reading.
- Deflect the SHUTTLE wheel to the left. As soon as the tape starts to move, write down the voltage reading.
- Compute the average of the two measured values.
- Measure the voltage in the neutral position of the SHUTTLE wheel. The measured value should agree with the computed average value. If this is not the case, the module must be removed for adjustment, and reconnected.

Adjusting the neutral position:

- Lightly loosen the headless screw (on the potentiometer shaft).
- Hold the SHUTTLE wheel in the neutral position and turn the potentiometer with a screwdriver until the correct value is attained.
- Tighten the headless screw and check the setting.
- Reinstall the assembly.

3.3.10 LC Display Unit 1.820.233

The contrast of the LC display can be optimized for various viewing angles.

- On machines with serial numbers up to 1000: Remove the front panel.
- Adjust the contrast for the preferred viewing angle by means of the trimmer potentiometer R1 on the CONNECTOR PCB 1.820.797.
- On machines with serial numbers greater than 1000: The trimmer potentiometer R1 is accessible through a hole in the front panel near the upper right corner of the LC display (CONTRAST).

3.3.11 Replacing and Aligning the Soundheads

Important!! To prevent unwanted magnetization of the soundheads, the machine must be disconnected from the power source before the headblock is removed or installed!

- Replacing the soundheads:**
- Remove the headblock cover (4 x hexagon-socket-head screws 2.5 mm)
 - Remove the headblock (3 x hexagon-socket-head screws 3 mm)
 - The soundhead can be removed after the screws [A] (hexagon-socket-screw key No. 3) accessible from the bottom has been removed.

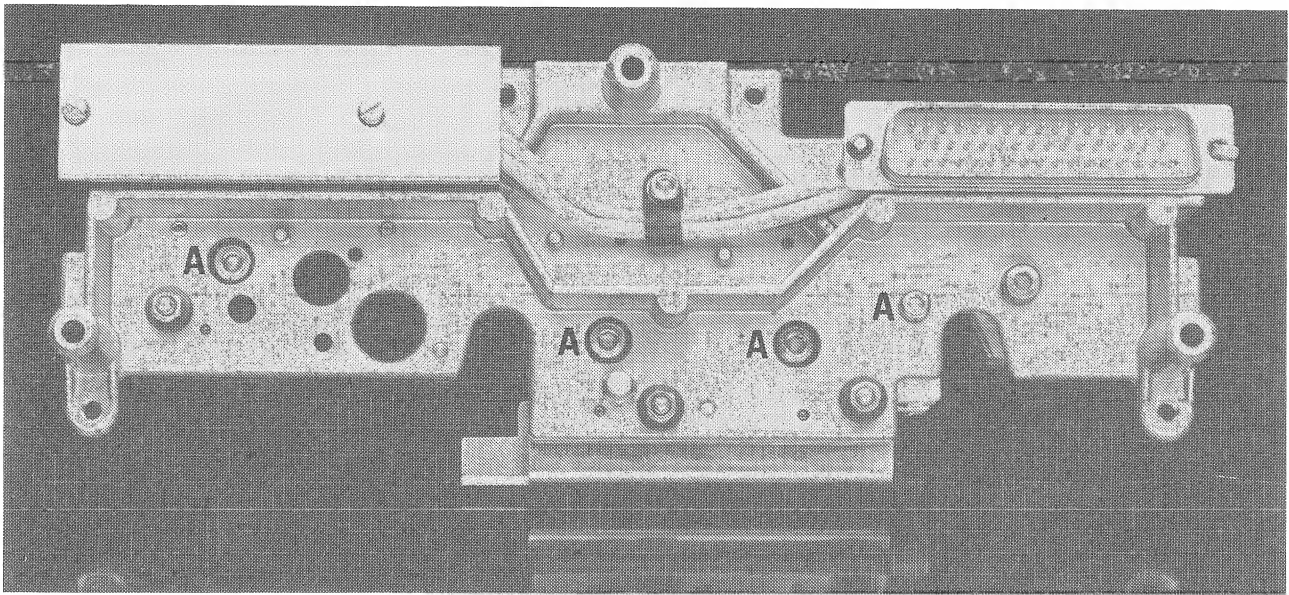


Fig. 3.1.43

Important !! Do not shift the black wobble plate when changing a soundhead! The distance between the soundhead support and the headface is milled exactly to the same dimension for all soundheads which means that no height adjustment of the soundheads is required.

After the soundhead has been replaced, check with the alignment gauge A80, A812, A820 1/4" (part No. 10.010.001.02) on the reference base A80, A812, A820 (part No. 10.010.001.01) that the head is positioned perpendicularly so that the height is correct. For this check the headblock and gauges must be placed on a precision levelling block (or as an expedient on a flat glass plate).

The azimuth alignment is described in Section 4.3.3.

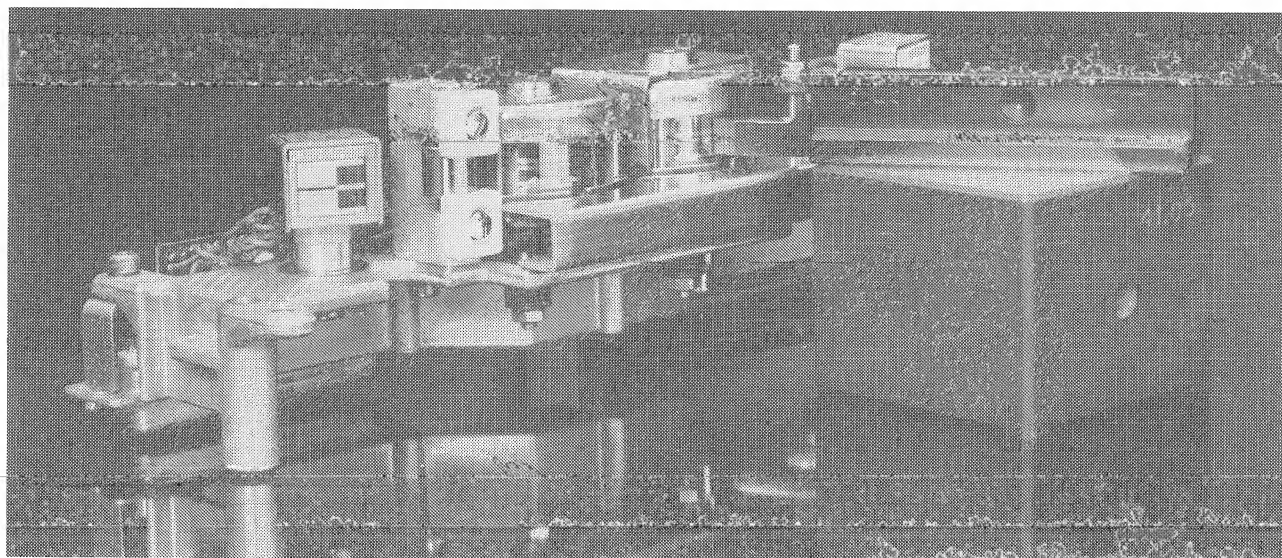


Fig. 3.1.44

Tape guide:

Check the tape guide [B] with the aid of the scrape flutter roller gauge A812/A820 1/4" (part No. 10.010.001.32).

The height of the ceramic parts can be adjusted with a blade screwdriver No. 3).

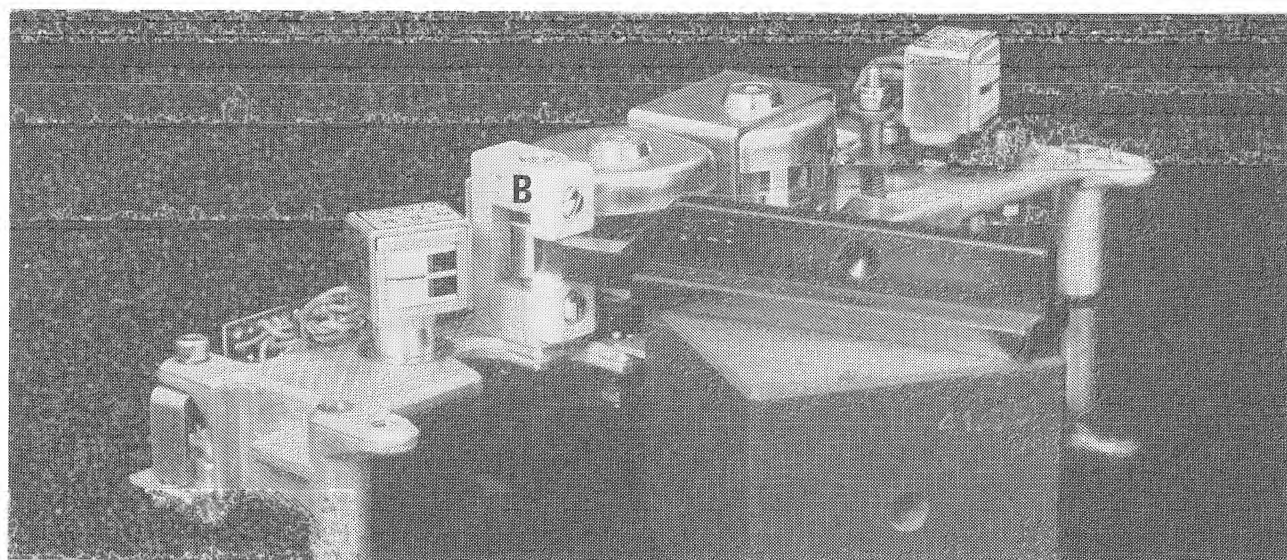


Fig. 3.1.45

Scrape flutter roller:

The scrape flutter roller can be removed after the hexagon-socket-head screw (3 mm), accessible from the bottom, has been unfastened.

After this roller has been removed, its height does not have to be checked because it has been precision aligned by the factory.

The mounting of the scrape flutter roller must be parallel to the record head, otherwise there will be insufficient space for the left-hand tape lift pin.

With the scrape flutter roller gauge A812/A820 1/4" (part No. 10.010.001.32) check that the scrape flutter roller is positioned perpendicularly on all sides.

3.3.12 Capstan Motor

Capstan motor tacho: The capacitive scanner as well as the three Hall effect sensors can only be adjusted at the factory!

3.3.12.1 Tacho Sensor Electronics PCB

Order No.

Tacho Sensor Electronics PCB

1.021.695

- Remove the capstan motor but leave it connected.
- Disconnect the TACHO SENSOR ELECTRONICS PCB 1.021.695 from the capstan motor /2 x (hexagon-socket-head screws 2.5 mm).
- Switch on the tape recorder, without tape, tape speed 15 ips.
- Put the capstan motor into operation by pressing PLAY.
- Connect a frequency counter to TP2 (ground to TP1).
- Adjust the oscillator frequency with L1 to 5.500 MHz \pm 500 kHz.
- Connect an oscilloscope (or AF millivoltmeter as an expedient) to TP4 (ground to TP1).
- With L3 adjust for maximum amplitude.
- Connect the oscilloscope (or AF millivoltmeter) to TP3 (ground to TP1).
- With L2 adjust for maximum amplitude.
- Connect the oscilloscope to the TD-TCM2 signal (IC1/pin2) and with R41 adjust to a pulse duty factor of 50%.

The following adjustments can or must be made with the capstan motor removed or installed (when the motor is installed, the trimmer potentiometer R41 is accessible from the bottom when the lower tape deck cover is removed and the tape deck electronics rack is tilted down):

- If a wow-and-flutter meter is available: Install the capstan motor. The linear wow and flutter can be adjusted to the minimum with R41.
- As an expedient this adjustment can also be made in one of the following two ways:
- Connect the oscilloscope (only when the motor is removed) to TP3 (ground to TP1). With R41 adjust for minimal signal jitter.

- By ear (also possible with installed motor): Press the blade of a large screwdriver (approx. No. 6) against the housing of the capstan motor and listen at the screw driver handle while adjusting the volume with R41 to the minimum.

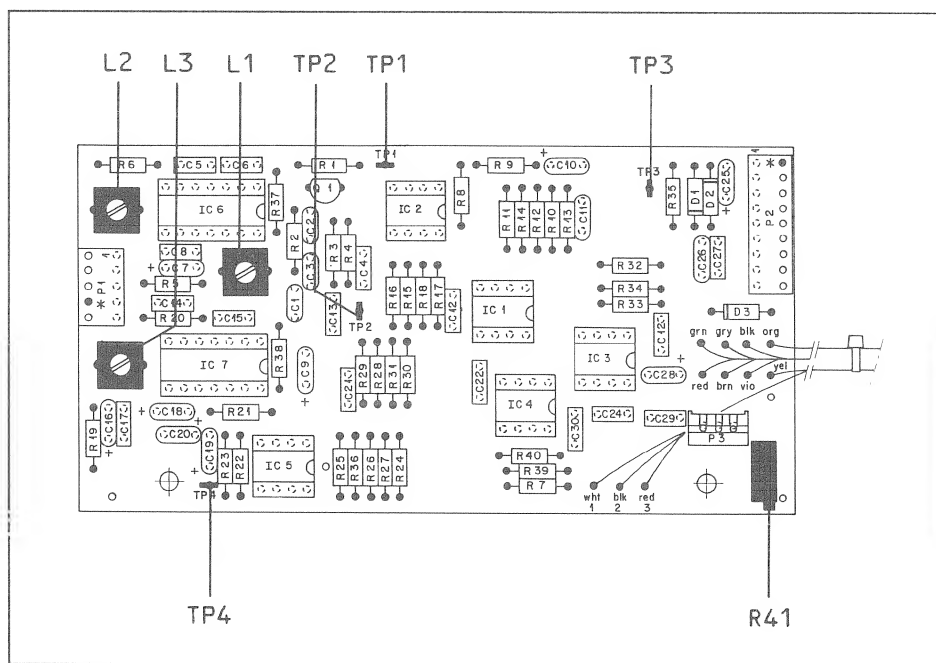


Fig. 3.1.46

3.3.13 Alignments and Test Points on the Circuit Boards of the Tape Deck Controller

Reference voltage for D/A converter:

These alignments are normally only required after repairs have been made on the corresponding board. The circuit diagrams of these boards can be found in the diagram section of this manual (in preparation).

- CAPSTAN INTERFACE PCB 1.820.727: With R12 on TP1 align to +10.00 V ± 0.01 V (relative to TP2).

Test points:

- CAPSTAN MOTOR DRIVE AMPLIFIER 1.811.775:

TP1: Ground

TP2: Needle pulses, TTL level, 76 kHz

TP3: Pulse width modulated signal, amplitude 0 to 50 V (relative to ground), the voltage depends on the capstan motor speed, 76 kHz.

TP4: DC voltage, mean value of the voltage on TP3, 0 to 50 V.

TP5, TP6, TP7: 120° phase shifted AC voltage, trapezoidally approximated sine shape

TP8: Square-wave signal, TTL level, combination of the output signals of the three Hall effect sensors (triple frequency).

4 Audio

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4.1 Circuit Descriptions

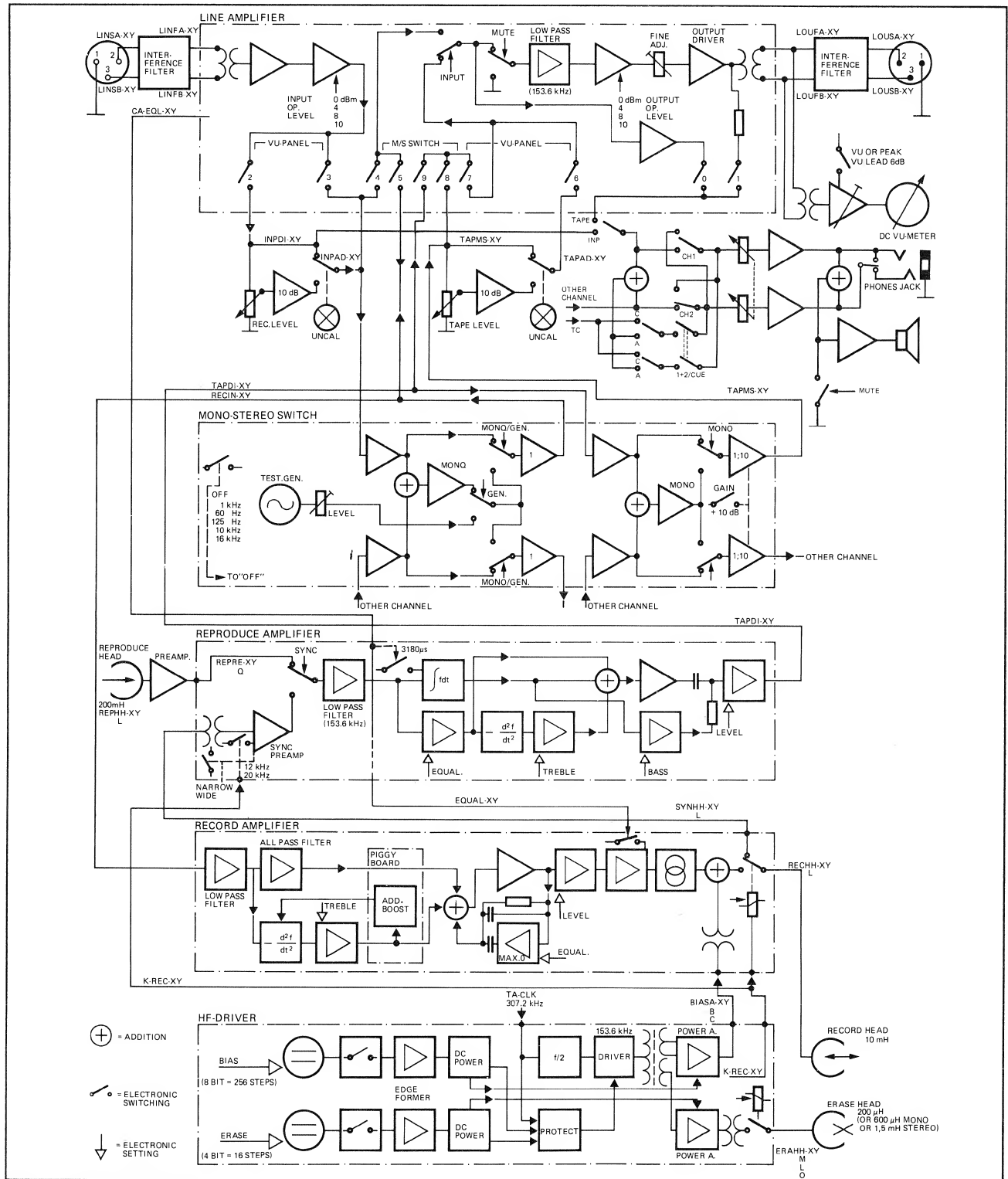


Fig. 4.1.1 Block Diagram

The audio section comprises:

- Line amplifier
- Reproduce amplifier
- Mono/stereo switch (option)
- Record amplifier
- RF driver

The following assemblies are also included (depending on version):

- Headblock
- Output meters
- Monitor amplifier
- Level controller for reproduction and recording
- Time code channel (CODE READ/WRITE UNIT and CODE DELAY UNIT)

4.1.1 Input and Output Sockets Line Amplifier

(GRP22/GRP23/GRP24)
(GRP21 ELM45/ELM50)

Order Number

Input and output sockets (GRP22/GRP23/GRP24)
and Line Amplifier (GRP21 ELM45/ELM50)

1.820.749

(with input/output transformer)

1.820.714

(without input/output transformer)

1.820.715 (+ 1.820.862)

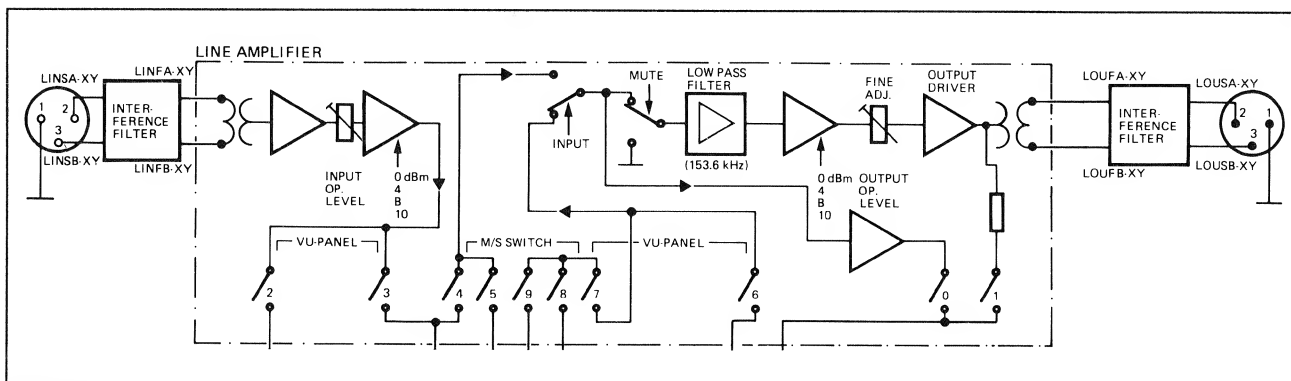


Fig. 4.1.2

Line Amplifier

(with input/output transformer)

1.820.714

The input signal is taken from the input socket via an interference suppression filter to the line amplifier. The interference suppression filter prevents radio-frequency voltages from nearby transmission equipment from entering the tape recorder.

The microprocessor establishes the following settings via an 8-way D-type flip-flop (IC1):

CA-DATA0...3

(internal signals): CA-LL0DB, CA-LL4DB, CA-LL8DB, CA-LLADB) switch the line level of the input and output to 0, 4, 8, or 10 dBm.

CA-DATA4	(CA-INPXY) Switches from REPRO/SYNC to INPUT
CA-DATA5	(CA-MUTXY) Mutes the line output.
CA-DATA6	(CA-SYNXY) Switches the reproduce amplifier from REPRO to SYNC.
CA-DATA7	(CA-EQLXY) Switches on the NAB equalization (3180 μ s) With the rising clock edge the flip-flop transfers the data available at the D-inputs to the Q-outputs.

A low-pass filter before the input transformer eliminates noise frequencies.

The input amplifier with IC3/2 is followed by the trimmer potentiometer R52 for compensating the manufacturing tolerances of the input transformer. The gain of IC3/1 is switched to the desired line level by the flip-flop outputs Q1, Q2, and Q3.

With DIL switch S1 the line amplifier can be matched to the applicable recorder configuration: with or without VU-meter panel or mono/stereo switch.

IC4, IC5, and IC7 switch the output of the line amplifier from INP to REP/SYNC; IC2 IC6, and IC8 mute the output.

The input change-over/muting switch is followed by a low-pass filter with IC10/2. With trimmer C25 the filter is aligned for maximum damping of the 153.6 kHz erase frequency. The gain of IC10/1 is switched to the desired line level by the flip-flop outputs and Q6, Q7 and Q8 .

The output level is fine-adjusted with R81. IC9/2 drives the complementary output transistors. The signal is taken to the output socket via the line balancing transformer and an additional interference filter.

The signal for the headphones socket and the internal monitor amplifier is tapped before the transformer. The output meter is supplied with the balanced output signal.

With JS0 and JS1 of DIL switch S1 the Headphones/monitor signal can be tapped at the output of IC9/1 (before muting; JS0 ON, JS1 OFF; monitor level independent of the selected output level and the muting of the output level), or at the line output (after muting; JS0 OFF, JS1 ON).

Line Amplifier + Line Output Amplifier

(without input/output transformer)

1.820.715/1.820.862

The input signal is taken from the input connector via an interference filter to the line amplifier. The interference filter prevents high-frequency voltages produced by nearby transmission equipment from getting into the tape recorder.

The following settings are established via an 8-way D-flip-flop (IC1):

CA-DATA0...3	(internal signals): CA-LL0DB, CA-LL4DB, CA-LL8DB, CA-LLADB) switch the line level of the input and output to 0, 4, 8, or 10 dBm. At the same time the monitor level is stabilized independently of the line level.
CA-DATA4	(CA-INPXY) Switches from REPRO/SYNC to INPUT
CA-DATA5	(CA2-MUTXY) Mutes the line output.
CA-DATA6	(CA-SYNXY) Switches the reproduce amplifier from REPRO to SYNC.
CA-DATA7	(CA-EQLXY) Switches on the NAB equalization (3180 μ s) With the rising clock edge the flip-flop transfers the data available at the D-inputs to the Q-outputs.

An RC low-pass filter before the input transformer eliminates noise frequencies. The common-mode input impedance can be decreased with jumper JS1 (position "N"). The common mode rejection ratio is set with the trimmer potentiometer R78 for low frequencies and with the trimmer capacitor C18 for high frequencies.

The gain of IC10/1 is changed over to the desired line level by the flip-flop outputs Q1, Q2, and Q3.

With DIL switch S1 the line amplifier can be matched to the applicable recorder configuration: with or without VU-meter panel; with or without stereo switch; monitor connection before muting or to line level.

IC4, IC5, and IC8 switch the output of the line amplifier from REPRO/SYNC to INPUT; IC3 IC6, and IC9 mute the output.

The input change-over/muting switch is followed by a low-pass filter with IC12/2. The gain of IC12/1 is switched to the desired line level by the flip-flop outputs Q4, Q5, and Q6.

The output level is fine-adjusted with R93.

The signal is taken to the LINE OUTPUT AMPLIFIER PCB where it is inverted (IC203/1). The inverted and the non-inverted signal is taken to a complementary output stage (IC202/1, Q203, 206, 207, 219, 220 or IC202/2, Q201, 202, 205, 213, 214).

From the two balanced output signals IC204/2 produces an unbalanced signal that is taken to the monitor path on the LINE AMPLIFIER board.

The AF output currents of the two output stages flow through two of the three windings of L201 which have an identical sense of winding. The magnitude of the currents are normally identical, but they flow in the opposite direction. As soon as the magnitude of the output currents differs (e.g. short circuit of one of the two output lines), an AF signal is induced in the third winding of L201. This signal is amplified in IC204/1 and fed via the analog switch IC201 to the two output stages as an additional AF input signal. This signal has the effect that the gain of the output stage whose output is connected to ground, is reduced in such a way that no current can flow. In addition the gain of the second output stage is increased to the point where an AF differential signal is available on the two output lines. The magnitude of this unbalanced signal is identical as without ground short. The large gain in the control loop has the effect that a negligible voltage is available on L201 (-> no magnetic flux and consequently no distortion contribution by L201).

One voltage magnification circuit each (Q215, D201, C220, D203, C221, and Q217, D202, C222, Q218, D204, C223 respectively) is controlled by the output stage outputs. When a large positive output voltage is available at the output stage comprising Q213, 214, the Darlington Q215 becomes conductive and connects a positive supply voltage to the negative pole of C220. The positive pole of the latter is already charged to approx. +15 V via D201, and is now boosted to approx. 25 V. A high positive supply voltage is thus briefly available to the output stage. If a high negative voltage is needed, the reverse process takes place.

The heat sink of the output transistors is in thermal contact with R252 (NTC). If the output stage transistors overheat, IC7/2 on the LINE AMPLIFIER board switches. The input signal is muted with IC3, 6, and 9 until the temperature has dropped to an admissible value.

At power on the generation of an AF control signal for the output stage is suppressed for a few seconds by the delay around IC7/1 and IC201. Uncontrolled alignment processes on the line output are thus prevented as long as the quiescent output voltage of IC204/1 is not yet at a defined potential.

The signal is taken to the output connector via an interference filter.
The output meter is supplied with the balanced output signal.

With JS0 and JS1 of DIL switch S1 the headphones/monitor signal can be switched from the output of IC11/1 (before muting; JS0 ON, JS1 OFF) to the output of IC11/2 (corresponds to line output, after muting; JS0 OFF, JS1 ON).

4.1.2 Preamplifier in Headblock Reproduce Amplifier

(GRP60 ELM02)
(GRP21 ELM44/ELM49)

Order Number

Reproduce Preamplifier PCB 1 channel
Reproduce Preamplifier PCB 2 channel
Reproduce Preamplifier PCB

1.810.710
1.810.711/.712
1.820.710

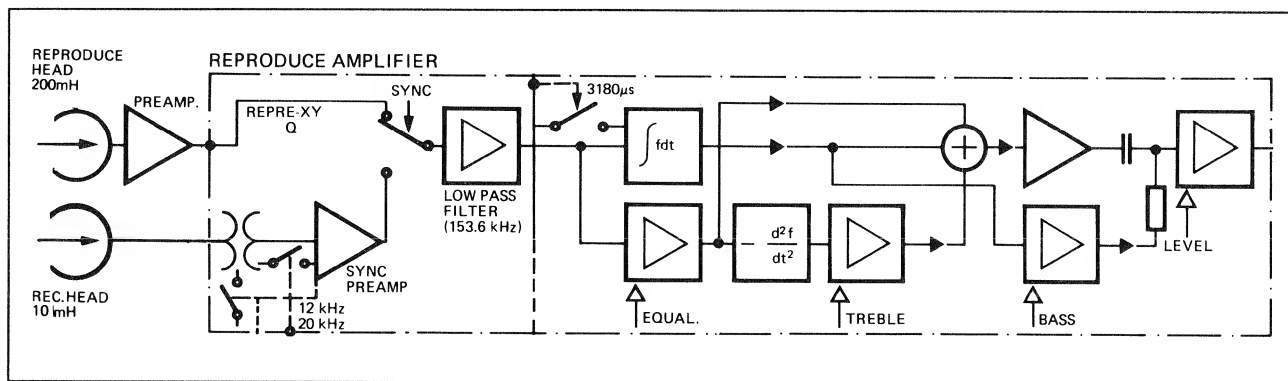


Fig. 4.1.3

A reproduce preamplifier 1.810.710/.711/.712 (GRP60 ELM2) is arranged between the reproduce head and the reproduce amplifier. This preamplifier which is arranged directly on the headblock (GRP60) produces a gain of approximately 28 dB. Q1 and Q4 are low-noise transistors; IC1 is a low-noise, internally compensated dual opamp. The preamplifier is linear up to approximately 25 kHz. Only when both supply voltages are present (± 15 V) is the preamplifier switched on (D1, Q2). This prevents current from flowing through the head winding when one of the supply voltages is missing and thus avoids magnetization of the reproduce head.

In two-channel and stereo recorders, cross talk between the two channels is minimized with the trimmer potentiometer R14.

The reproduce signal REPRE-XY is taken via screened conductors to the reproduce amplifier.

The reproduce amplifier is laid out in such a way that the reproduce signal or the SYNC signal can be processed.

The input signal is changed over from normal reproduction to SYNC with the signal CA-SYN01 (02) via IC10 and the FET switches IC5 and IC6. The SYNC signal (SYNHH-XY/SYNHL-XY) is taken via the input transformer T1 and the SYNC amplifier comprising Q2 and IC7/2. The bandwidth of the SYNC amplifier can be switched from 12 kHz (NARROW) to approximately 20 kHz (WIDE) by means of a jumper in which case strong cross talk between the record and the SYNC reproduce channel is to be expected on 2-channel recorders.

The reproduce signal is taken via a low-pass filter comprising IC14/2. This filter is aligned with trimmer potentiometer C31 to achieve maximum attenuation of the 153.6 kHz erase frequency.

The CA-EQL01 (02) signal connects the 3180 μ s time constant (IC14/1) via IC9 and FET switch IC4.

A signal of the auxiliary path (inverting two-fold differentiating circuit) is added to the signal of the auxiliary path (integrator with IC14/1) for phase-linear correction of the air gap loss in the reproduce head.

The equalization time constant is set with IC16, IC15/1; the frequency response is set with IC13, IC15/2 (treble) and IC8, IC7/1 (bass). The data stored in RAM are transmitted from the MPU to the corresponding 256-step attenuators.

The reproduce level is set with IC11, IC12/2 (resolution 256 steps).

IC2 (DUAL BINARY TO 1-OF-4 DECODER/DEMULTIPLEXER) decodes the address of the corresponding digital/analog converter IC8, 11, 13 or 16 from the address lines of the CMOS bus (CA-ADR-R, -S, -T, -U), and activates this address for data transmission.

4.1.3 Mono/Stereo Switch with Test Generator (GRP21 ELM46) Mono/Stereo Switch without Test Generator

Order Number

Mono/stereo switch PCB

1.820.720

Mono/stereo switch with test generator

1.820.724

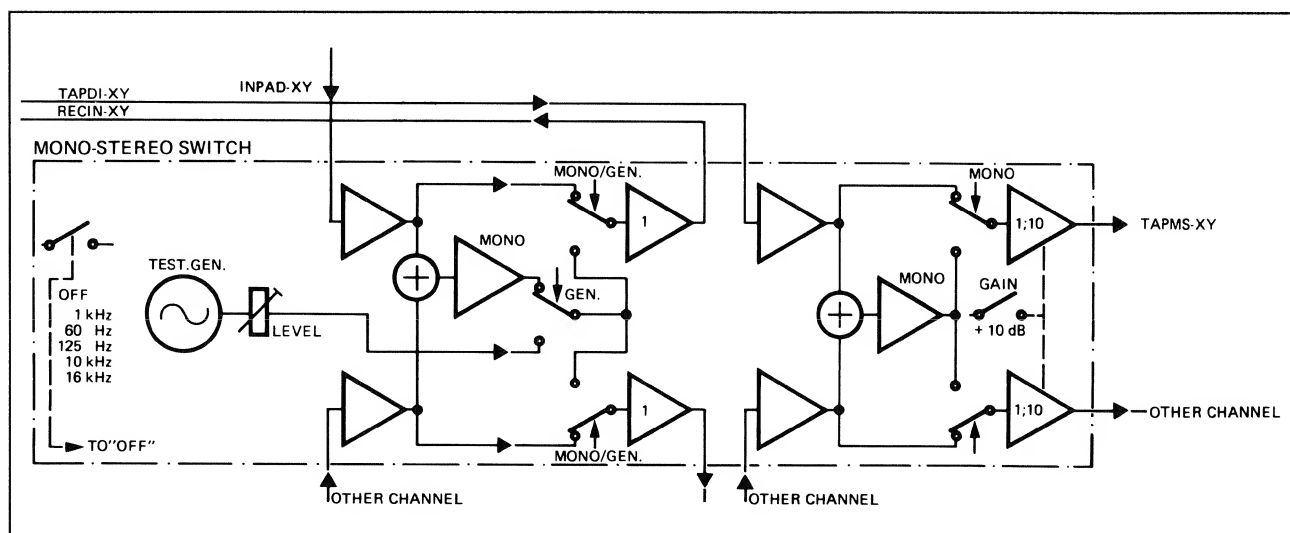


Fig. 4.1.4

The mono/stereo switch processes the two input signals and the two reproduce signals in two separate branches.

The input signals INPAD-01, 02 are taken from the outputs of the two line input amplifiers with internal reference level of 0 dBm to the mono/stereo switch. In stereo mode the signals buffered by the voltage followers IC3/1, 3/2 are taken directly to IC6/1, 6/2, or in mono mode they are added via the resistors R42 and R37 and amplified in IC25/1. The level of the mono signal is adapted with potentiometer R205. Mono/stereo changeover is performed via IC 19 (PROM) and the comparators IC13/1, 16/2 by means of the FET switches IC17, 21, 24, and 26.

The operating mode is selected with the jumper JS2: mono signal from INPAD-01 + INPAD-02 or only from INPAD-01.

The output signals from IC6/1 and IC6/2 (RECIN-01, -02) are taken with internal reference level to the record amplifiers and the line output amplifiers.

The reproduce signals TAPDI-01, 02 are taken from the reproduce amplifiers to the inputs of the voltage followers IC10/1, 10/2; they are decoupled and added by R81 and R80 to a monosignal. The monosignal is amplified in IC31/1, the level can be adjusted with R206. The mono/stereo changeover is achieved with FET switches. The operating mode can be selected with jumper JS3: the monosignal can either be connected to channels 1 + 2 (TAPMS-01, 02) or to channel 1 only (TAPMS-01).

The signals TAPMS-01, 02 are transmitted to the line output amplifiers.

Test generator

(only 1.820.724)

The test frequencies are produced by the function generator IC2. The balance is set with R8, the sine shape with R20. The frequencies are changed over with IC20 (PROM) and Q1 ... Q5.

When the upper key (FREQ) is pressed, the test generator is switched on (REF pilot lamp [DL205] is light, i.e. the reference frequency, normally 1 kHz, is selected). If this button is pressed repetitively, the frequency changes as follows:

60 Hz - 125 Hz - REF - 10 kHz - 16 kHz - OFF - REF - etc.

With the lower key (LEVEL) the generator level can be switched to a level that is 10 dB lower than the nominal level. When "-10 dB" is selected, the gain in the reproduce branch of the mono/stereo switch is automatically boosted by 10 dB; this means that the reference value of the VU-meter display is the same as for nominal level when measurements are made with tape present.

The lower key (LEVEL) is only active when the test generator has previously been enabled with the upper key. After the test generator has been switched OFF and ON again with the upper key (FREQ), nominal level is always available on the test generator output.

The output signal of the function generator is taken via IC31/2 and IC25/2 to the mono branch. The output signals of IC7/1 23/2 decide whether the input signals (INPAD-01, -02) or the test signal are connected to the record amplifiers (RECIN-01, -02). This changeover is achieved with FET switches.

The generator level can be adjusted with potentiometer R208.

4.1.4 RF Driver (GRP21 ELM42/ELM47)

Order Number

HF-Driver

1.820.713

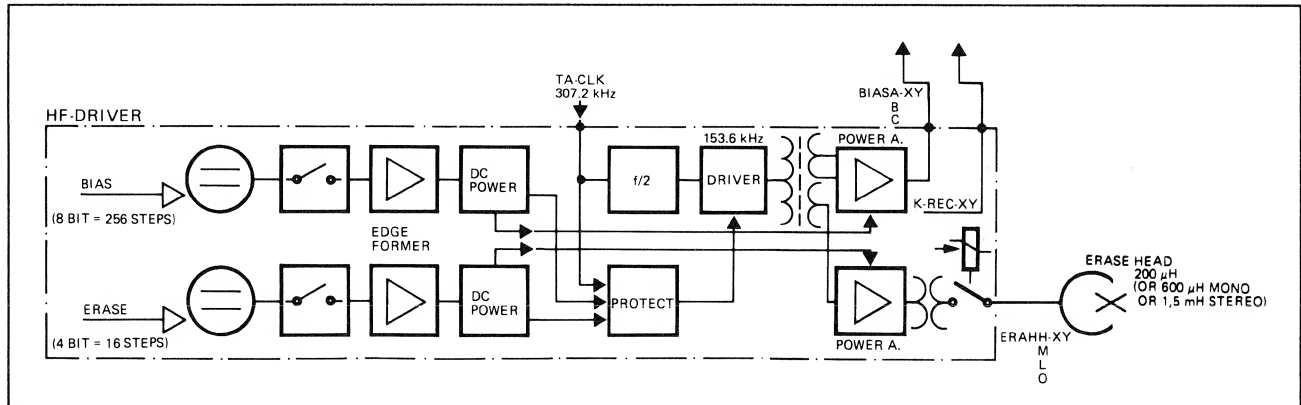


Fig. 4.1.5

The erase and bias currents are prepared on the RF driver.

The 307.2 kHz quartz reference of the microprocessor TA-CLK is divided in IC3 (DUAL JK NEGATIVE EDGE-TRIGGERED FLIP-FLOP) to 153.6 kHz. The outputs are connected to the RF driver IC11.

The erase and bias output stages are controlled by the windings of the transformer T2.

The DC voltage reference for the erase current is defined (in 16 steps) by IC1 (OCTAL D-TYPE FLIP-FLOP) IC6/2 through the data lines

CA-DATA-0 ... 3. The DC voltage reference for the bias current is defined by the MASTER MPU, via the 256 step attenuator IC2.

IC1 also decodes the commands for switching on the erase and bias current. CA-SAFE = 0 activates IC1.

The DC voltage values defined by the microprocessor are switched on or off by Q1 (erase current) and Q2 (bias current). IC9/1 or IC10/1 respectively shapes the ON- and OFF-switching edge in such a way that click-free drop-in and drop-out is achieved. The DC currents supplied by IC9/2, Q13, and IC10/2 to the corresponding power amplifier stages are proportional to the required output currents. Q11 and Q10 respectively control these currents and in the event of an overload switch off the RF driver IC11 via D12 and the comparator IC8/1.

The clock signal (IC3, PIN 9) is checked; the RF driver is also switched off via IC8/1 if the clock is missing or corrupted.

The standby signal TA-ACT-01 (-02) is connected via IC8/2 in order to signal to the microprocessor that channel 1 or 2 is ready. The TA-ACT signal checks whether or not the corresponding record amplifier is plugged in.

The erase current is connected by Q5 and Q8 at CLOCK frequency to the primary windings of T1. The erase current receives its sine shape through the parallel resonant circuit comprising the inductor of the secondary winding and C3. A second resonant circuit comprising the inductor of the erase head and a capacitor (built into the headblock) is coupled loosely via R4 to a portion of the secondary winding of T1.

IC7, IC4 and relay K1 switch the erase current on or off.

The bias current is generated by Q3 and Q4 in the same manner as the erase current, and taken to the output transformer on the record amplifier board.

4.1.5 Record Amplifier (GRP21 ELM42/ELM48)

Order Number

Record amplifier

1.820.712

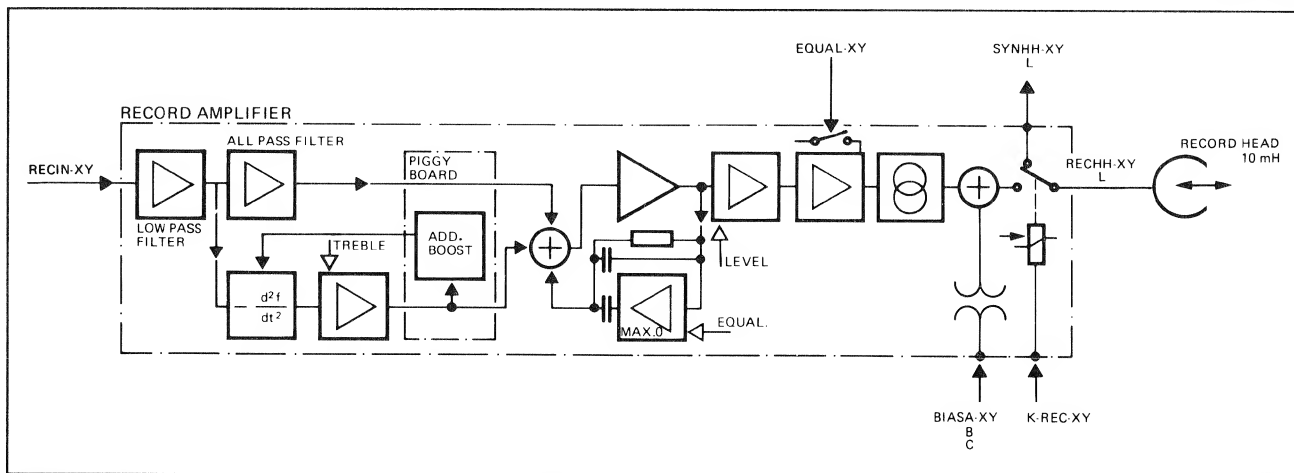


Fig. 4.1.6

The audio signal (RECIN-01 (-02) from the line amplifier is taken via a low-pass filter comprising IC7/1. The low-pass filter is designed for maximum attenuation of the 153.6 kHz erase frequency.

The treble losses of the record head air gap are compensated with phase-linear correction elements. The inverting two-fold differentiating circuit (IC10) is followed by the treble control element IC8, IC9/1 (record frequency response). A portion of the audio signal is mixed into the input of IC 10/2 via the plug-in ADAPTATION BOARD in order to improve the steepness of the height correction. The summed components of the corrected record signal are amplified by IC9/2.

The equalization time constant is set with IC5, IC6/1, the record level is set with IC3, IC6/2. The audio parameters stored in RAM are transmitted from the MPU to the corresponding 256-step attenuators.

The 3180 μs time constant is connected by EQUAL-01 (-02) via the FET switch IC2.

The record signal is taken to opamp IC4/2 which is wired as a current source.

The signal AFCSW-01 (-02) (AUDIO FREQUENCY CURRENT SWITCH) controls the record current via Q1. The record and bias current are added via T1. The two RF filters comprising L3 and L4 prevent stray pickup of the bias frequency by the other circuit elements. The bias current is discharged via the series resonant circuit comprising L2; a closed bias current loop is thus formed with the two windings of T1 and the winding of the record head.

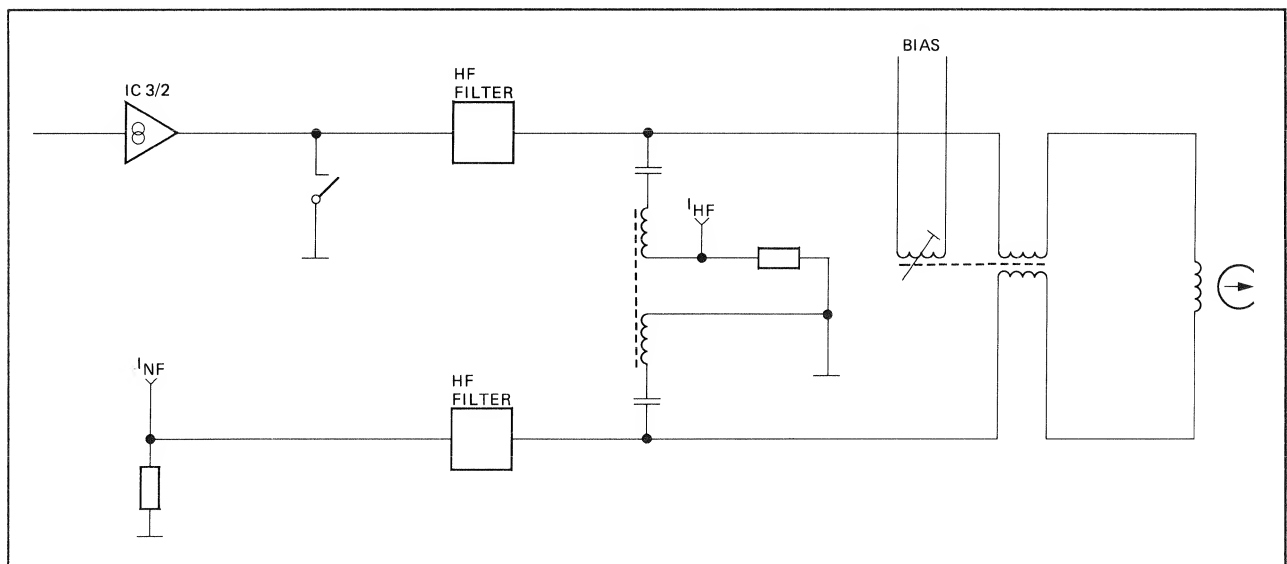


Fig. 4.1.7

4.1.6 Time Code Channel

General

Two-channel recorders can be equipped with a time code channel. The 0.38 mm wide code track is located between the two audio tracks. The time code signal (80 bits per full frame according to SMPTE) is recorded with biphase modulation.

The tape flux is 729 nWb/m peak-to-peak ± 3 dB.

A reproduce (read) head is integrated in the audio erase head {A}. This head "reads" during audio reproductions/recordings and slow forward editing. A second time code head is arranged on the far right of the headblock {B}. This is a combined erase/reproduce/record head (read/write head). This head "reads" during spooling and slow reverse editing and is able to record the time code signal.

Time code heads:

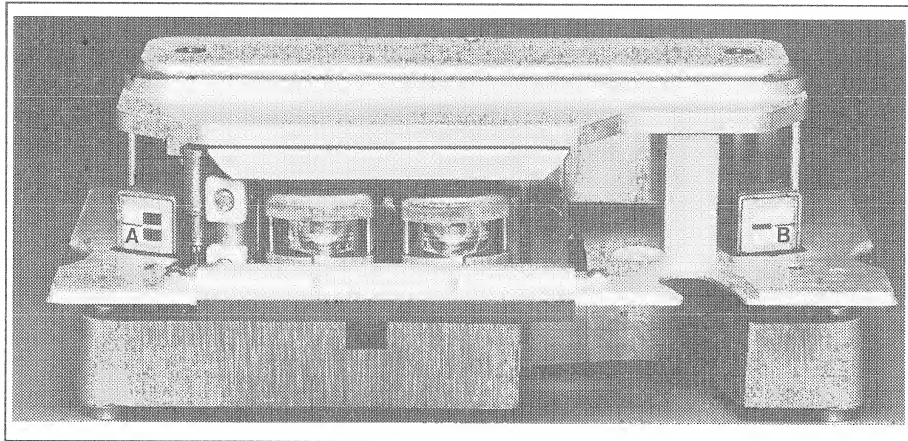


Fig. 4.1.8

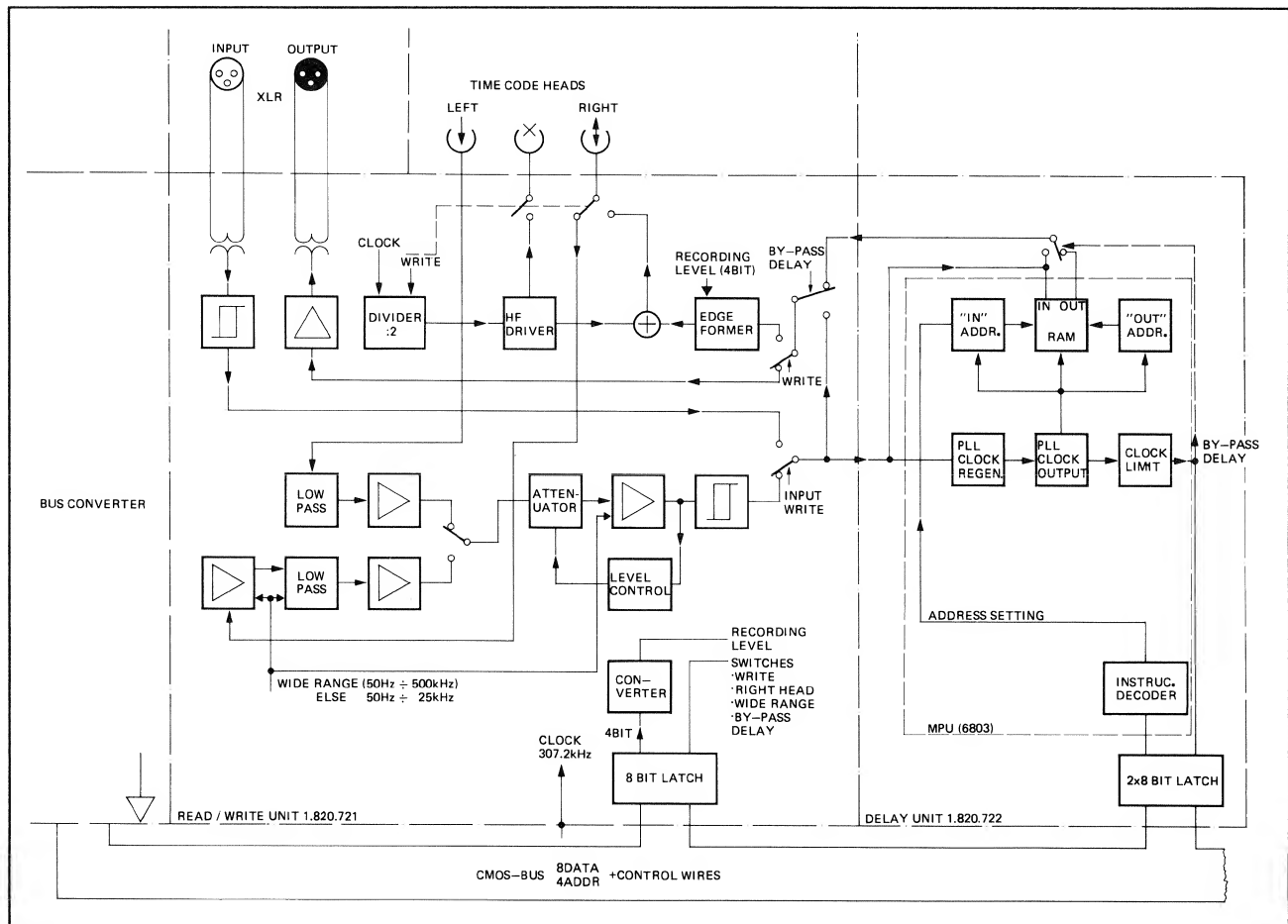


Fig. 4.1.9

CODE READ/WRITE UNIT (GRP21 ELM40)

1.820.721

Time code reproduction:

The signal of the left-hand head REPHH-TC, REPHL-TC (active for audio reproduction or recording) is taken via a low-pass filter/amplifier comprising IC15/1. The low-pass filter suppresses the 153.6 kHz erase frequency (cross talk audio-erase frequency -> time code reproduction). The signal of the right-hand code head RECHH-TC is taken to a low-pass filter/amplifier IC12, IC16. The bandwidth of the filter is automatically switched over with Q7. The bandwidth is large during spooling and small during slow reverse editing.

The outputs of the two filters/amplifiers (signal of the left-hand or right-hand code head) are connected with FET switches Q10, Q11 to the limiter (IC13, changeover switch IC4/2, IC11, IC14, Q9). Even for variable speeds this limiter supplies a constant output signal which is reshaped into a square-wave signal by a Schmitt trigger (IC6/1, IC10, IC7). The time code reproduce signal is taken either directly or via the CODE DELAY UNIT (jumper JS2 or changeover switch IC4/1) to the line output amplifier IC2, (IC18 on the time code read write unit 1.820.721.85) the line balancing transformer T2, and as the signal LOUFA-TC, LOUFB-TC to the balanced and floating output socket.

Time code recording:

The recording signal LINFA-TC, LINFB-TC is taken via the balanced and floating input connector, the input transformer T1, and the changeover switch IC4/2 to the Schmitt trigger (IC6/1, IC10, IC7) and to the CODE DELAY UNIT.

The output signal of the CODE DELAY UNIT is connected by the changeover switch IC4/3 to the input of the record amplifier.

With Q5, IC9 the signal edges are shaped in such a way that a trapezoidal recording signal is attained.

The signal TA-CLK from the MPU is divided in IC8 from 307.2 kHz down to 153.6 kHz and converted in the RF driver IC5 to an erase and bias signal. The erase current is decoupled via T3 and taken via screened lines as the ERAHH-TC/ERAHL-TC signal to the erase head. The bias current is added by the secondary winding of T3 via the trimmer capacitor C9 to the trapezoidal recording signal. The changeover relay K1 determines whether the combination head operates as a reproduce or record head. The output signal RECHH-TC, RECHL-TC is taken via screened lines to the combination head.

The MASTER MPU established the following settings via the CMOS bus (by means of the 8-way flip-flop IC1, address decoder IC3):

- Record level (4 bits, of which 3 are used), adjustable with:

R2 (7.5 ips), R8 (15 ips), and R10 (30 ips).

- Record function (CA-WRTTC = 1)
- Slow reverse editing, right-hand code channel, narrow-band (CA-RS2TC = 1)
- Spooling, right-hand code head, wide-band (CA-RS1TC = 1)
- Bypassing the DELAY UNIT (CA-BPDTC = 1)
- INPUT, input signal to output (CA-RS1TC = 1 and CA-RS2TC = 1 and CA-BPDTC = 1).

For bias and record level alignment refer to Section 4.7.

CODE DELAY UNIT

(GRP21 ELM41)

1.820.722

The time code signal is delayed in the CODE DELAY UNIT in such a way that the audio and time code signals on the tape coincide, i.e. the distance between the heads is automatically compensated.

An additional microprocessor IC2 (6803) is used for this purpose.

A PLL (PHASE LOCKED LOOP) with clock regeneration is implemented by programming (software).

The external microprocessor memories comprise 2K PROM (IC18) and 8K RAM (IC14). The RAM can hold 8192 half-bits = 51 full frames.

Information from the MASTER MPU (1.820.786) is transmitted via the TTL bus, the bus converter and the CMOS bus to the two 8-bit latches IC8, IC9 of the DELAY UNIT and comprises:

- required delay
- direction of tape travel
- bypass command

4.2 Calibration

The audio parameters are loaded from RAM into the registers of the audio amplifier whenever the machine is switched on, or the tape speed, the tape type, or the equalization standard is changed.

When new parameters are set with the UP/DOWN keys or via the serial interface, the parameters stored in the RAM and in the registers of the audio amplifiers are overwritten.

If the data in the RAM are lost, the default data stored in the PROM are automatically loaded.

4.2.1 Introduction

General

The assumption is that the tape recorder to be calibrated has been mechanically adjusted to specifications (particularly with respect to the tape tensions and the tape transport).

Before you start with the calibration of the tape recorder, clean and demagnetize the soundheads and the tape guidance elements.

The calibration of the tape recorder should always be performed in the following order:

Reproduce alignments

Preferred studio tape speed:

- Level
- Azimuth alignment of the reproduce head gap (see note 1)
- Frequency response (see note 2)

All other tape speeds:

- Level
- Frequency response (see note 2)

Note 1

Depending on the reference tape, minor deviations can occur between the different speeds. In this case the final azimuth alignment should be made with the preferred studio speed.

Note 2

Normally the studio tape recorders are calibrated with full-track reference tapes. Due to fringing, frequency response errors occur in stereo and 2-channel machines at low frequencies. For this reason you should align the reproduce frequency response for low frequencies with tape. This means that if no calibration tapes with the correct guard track width are available, the alignment of the reproduce frequency response is to be repeated after the record frequency response has been made with tape.

Record alignments

Preferred studio tape speed:

- Record level preadjustment
- Azimuth alignment of the record head gap (bias parameter at approximately the same value for both channels!)
- Bias
- Record level
- Frequency response

All other tape speeds:

- Record level preadjustment
- Bias
- Record level
- Frequency response

SYNC reproduction

All tape speeds (except 3.75 ips):

- Level
- Frequency response

4.2.2 Level Definitions Voltage Level 0 dBu = 0.775 V

Voltage level 0 dBm =

0.775 V:

Based on the power level of 1 mW into a load resistance of 600 ohms. The resulting voltage is 0.775 V and is defined as 0 dBm.

0 dBu

(=0.775 V):

Corresponds to a voltage of 775 mV without reference to a load resistance [dBu]. Occasionally used in place of the voltage level [dBu].

Line level

- A level which appears on the output of a tape recorder when a tape with reference flux is reproduced, or
- when fed to the input of a tape recorder, produces reference flux on the tape.

Voltage reference level

CCIR designation for line level; this level produces a 0 dB indication on a quasi peak program meter (PPM).

Standard reference level

(operating level):

Designation commonly used in the USA for the level required to produce a tape flux of 250 nWb/m (for recording on high-quality tapes) or 200 nWb/m (for recording on standard tapes); this level gives a reading of 0 VU on a VU-meter.

Peak level

Designation commonly used in the USA for a level that is 8 to 10 dB higher than the operating level. For reasons of simplicity, a peak level of +6 dB relative to the operating level (double the voltage value) is used for calibrating a tape recorder.

CCIR/IEC setting

Definition	Line level (dBm)	VU-meter reading, jumper in "PEAK" position (dB)
Reference Level	+ 6	0

NAB setting

Definition	Line level (dBm)	VU-meter reading, jumper in "VU" position (VU)
OPERATING LEVEL "PEAK LEVEL"	+ 4 + 10	0 + 6

Reproduce level = operating level

4.2.3 Equalization Networks

Equalization networks that correct the frequency response are installed in the record and reproduce path.

The attack points of the correction are referred to as the transition frequencies or transition time constants ($1/2 f$) and have been standardized by various organizations (IEC, NAB, AES, CCIR).

TAPE SPEED	TRANSITION FREQUENCIES, LOW AND HIGH (TRANSITION TIME CONSTANTS)		
	IEC-1968	NAB-1965	NAB-1975
9,53 cm/s 3,75 ips	50; 1800 Hz (3180; 90 μ s)	50; 1800 Hz (3180; 90 μ s)	– (–)
19,05 cm/s 7,5 ips	0; 2240 Hz (∞ ; 70 μ s)	50; 3150 Hz (3180; 50 μ s)	0; 3150 Hz ∞ ; 50 μ s
38,10 cm/s 15 ips	0; 4500 Hz (∞ ; 35 μ s)	50; 3150 Hz (3180; 50 μ s)	(–)
76,20 cm/s 30 ips	0; 9000 Hz (∞ ; 17,5 μ s)	AES 1971 0; 9000 Hz (∞ ; 17,5 μ s)	– (–)

4.2.4 Magnetic Reference Flux, Standard Calibration Data

When a recording with reference flux is reproduced, line level is available on the output of the tape recorder.

The following standard settings are made by the factory:

CCIR setting

- Line voltage: 220 V
- Line frequency: 50 Hz
- Line level: + 6 dBm
- VU-meter reading at line level: + 6 VU
- Load impedance: 600 ohm
- Tape type: AGFA PER 528
- Tape flux at line level:

3 3/4 ips,	stereo: 400 nWb/m
3 3/4 ips,	mono: 250 nWb/m
7½ ips,	stereo 510 nWb/m
7½ ips,	mono: 320 nWb/m

15 ips,	stereo: 510 nWb/m
15 ips,	mono 320 nWb/m
30 ips,	stereo: 510 nWb/m
30 ips,	mono: 320 nWb/m

NAB setting

- Line voltage: 220 V
- Line frequency: 50 Hz
- Line level: + 4 dBm
- Reading of the VU-meter at line level: + 0 VU
- Load impedance: 600 ohm
- Tape type: Scotch 3M 226
- Tape flux with at level:

3 3/4 ips,	200 nWb/m
7½ ips,	250 nWb/m
15 ips,	250 nWb/m
30 ips,	250 nWb/m

Until further notice the machines leaving the factory will be calibrated to one of these two standards.

4.2.5 Calibration Tapes

Calibration tapes are used for aligning the reproduce path of tape recorders. They are generally magnetized across their full width. A separate tape is used for each tape speed.

Important!! In order to prevent unintentional erasure of these costly tapes, all channels should be switched to SAFE during playback. On machines without SAFE key the MASTER SAFE key should be actuated.

The reference tapes contain the following sections:

Level tone section

(Reference flux = 320 nWb/m for 7½, 15, and 30 ips; 257 nWb/m for 3 3/4 ips) produces line level in play mode on the output of the tape recorder.

The output level should be adjusted to the specified line level, while the approx. 60 to 180 sec. level tone section is being played.

NAB calibration tapes with a reference flux of 200 nWb/m produce an output level of -4 dB relative to 320 nWb/m.

Reference frequency: 333 Hz or 500 Hz at 3 3/4 ips; 1 kHz at 7½ to 30 ips (there are also NAB calibration tapes with 700 Hz reference frequency).

Level adjustment

- If the tape recorder is to be calibrated with a different (usually higher) reference level, the reference flux difference is computed according to the following formula:

Example

$$20 \log_{10} \frac{\text{Reference flux on the tape}}{\text{Reference flux on tape}} = \text{Difference [dB]}$$

Example

Reference flux on the calibration tape	= 200 nWb/m
Desired reference flux, e.g. for a high-dynamic tape	= 510 nWb/m

$$\text{Difference} = 20 \log_{10} \frac{510 \text{ nWb/m}}{200 \text{ nWb/m}} = 8 \text{ dB}$$

Also refer to Fig. 4.2.1

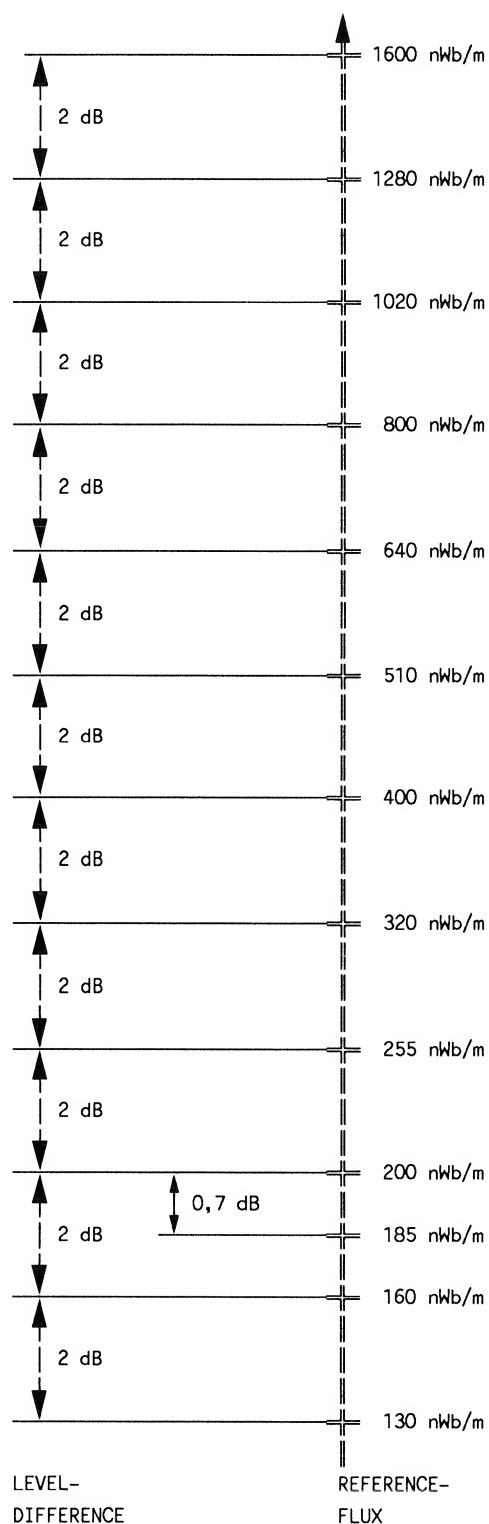


Fig. 4.2.1

Azimuth alignment section

Used for correcting the perpendicularity (azimuth) of the reproduce head gap. This section comprises a shorter section with reference frequency (for coarse adjustment) and a longer section with 10 kHz for fine-adjustment. NAB calibration tapes can be sectioned differently. The level of this section is normally 10 dB below the reference level.

The alignment is made by means of the azimuth adjustment screw until the normal output voltage is achieved. On two-channel and stereo recorders, alignment to minimum phase difference between the two channels is possible with the aid of a 2-channel oscilloscope or an AF millivoltmeter with two inputs and summation.

Important !! If major adjustments on the reproduce head are made, additional voltage peaks occur, however with lower level!

If the reproduce amplifier operates with correct equalization, there is no difference between the reproduce levels of the reference frequency and the 10 (8; 16) kHz recording.

Frequency response section

Used for determining and adjusting the reproduce frequency response. NAB calibration tapes exist on which the frequencies differ from the following table.

REFERENCE TAPE	CCIR				NAB			
TAPE SPEED [m/s];[ips]	9,5	19	38	76	3,75	7,5	15	30 (AES)
REV. LEV. SEC.: REF. FREQ. REF. FLUX. DENS.	333 Hz 257nWb/m	1 kHz 320nWb/m			500 Hz 200nWb/m	1 kHz (700 Hz) 200 nWb/m		
AZYMUTH ALIGNMENT SECT. (-10 dB)	333Hz 10 kHz	1 kHz 10 kHz			250 Hz 4 kHz 8 kHz	500 (700) Hz 8 kHz 16 kHz		
FREQUENCY RESP. SECTION: (CCIR: -20 dB) (NAB : -10 dB)	333 Hz 31,5 40 63 125 250 500 1 kHz 2 4 6,3 8 10 12,5 14 16 333 Hz	1 kHz 31,5 Hz 40 63 125 250 500 1 kHz 2 4 6,3 8 10 12,5 14 16 18 1 kHz			31,5 Hz 63 125 250 500 1 kHz 2 4 5 6,3 8 10 10 500 1	31,5 Hz 63 125 250 500 1 kHz 2 4 8 10 12,5 16 Hz 20 kHz		

4.2.6 Preparatory Steps

Before you start with the calibration, the parameters of the tape recorders must be programmed for the desired application. Also refer to section 2.6 "SOFT KEYS".

Line level

Set the required line level:

OPERATING LEVEL (NAB)	REFERENCE LEVEL (CCIR)	FUNCTION No.
0 dBm	6 dBm	009
4 dBm	10 dBm	010
8 dBm	14 dBm	011
10 dBm	16 dBm	012

The four functions 009...012 are used to adapt the tape recorder to the line level used in the studio. The operating level as well as the reference level are shown on the LC display. The first (smaller) of the two level indications relates to NAB, the second to CCIR.

If the line level used in the studio does not correspond to any of the available gradations, use the value that comes closest to the studio level, and adjust the internal record and reproduce levels in such a way that the tape recorder corresponds to the desired studio level.

- Examples**
- Function 011, CCIR equalization, reference level = 14 dBm, VU-meter amplifier switched to PPM characteristic (jumper on VU-meter amplifier), PPM reading at reference level = 0 dB.
Information on the LC display when the machine is ready:

L RANGE: 8 /14 dBm

- Function 010, NAB equalization, operation level = 4 dBm, VU-meter amplifier switched to VU characteristic (jumper of VU-meter amplifier), VU-meter reading at operating level = 0 VU.
Information on the LC display when the machine is ready:

L RANGE: 4/10 dBm

- Function 011, CCIR equalization, selected reference level = 16 dBm, desired line level 15 dBm, VU-meter amplifier switched to PPM characteristic (jumper of VU-meter amplifier), PPM reading at reference level = 0 VU.
Information on the LC display when the machine is ready:

L RANGE: 10/16 dBm

Checking the output level and the VU-meter reading:

- Connect the AF generator to the line inputs (CH1 and 2) and feed 1 kHz with line level.

- Connect the AF millivoltmeter to one of the line outputs and load the output with 600 ohm (standard) or with 200 ohm (minimum) (if the usual termination impedance in the studio is considerably higher, the output should be terminated with this impedance).
- Switch on the tape recorder and press the INP key of channels 1 and 2.
- Release all UNCAL keys (calibrated level).
- Or, also for machines without VU-meter or channel control module: The top position of the AUDIO ALIGNMENT block (see 2.6, SOFT KEYS) is used to switch all audio channels of the machine to INPUT; press v/NEXT three times. The following information appears on the LC display:

<p style="text-align: center;">LINE OUT CALIBRATION AUDIO CHANNELS INPUT</p>
--

As long as this information is displayed the audio section of the machine is switched to INPUT (if VU-meters or channel control modules are installed, the INPUT LEDs are light).

- With the LINE AMPLIFIER trimmer potentiometers accessible from the front, adjust the output level to the line level (fine-adjustment for compensating the load impedance).

Checking the VU-meter reading:

- U-characteristic: 0 VU should be indicated when line level is available.
- PPM characteristic: -6 dB (NAB) or 0 dB (CCIR) should be indicated when line level is available.

The VU-meter reading can be corrected with the trimmer potentiometer on the rear of the VU-meter amplifier.

CCIR/NAB equalizations

- Select the required equalizations on the function and programming keypad: CCIR or NAB (press the changeover key together with STOP).

If identical calibration data (level, frequency response, bias) are desired for both equalizations, proceed as follows:

- Select the preferred equalization (master panel)
- Adjust and check all audio parameters according to the alignment instructions.
- Activate function 033 (CCIR/NAB SAME; same parameters for both equalizations, see 2.6 SOFT KEYS).
- Recall all previously set parameters and store them again.

The same parameters are now programmed for both equalizations.

For special cases the equalization time constants can be corrected individually. In this case it is important that the function CCIR/NAB SAME is switched off!

Tape type A/B

Set the tape type selector to the desired position (press this key together with STOP!).

Important !!

The reproduce and record settings must be repeated step by step for the second tape type!

4.2.7 Input Procedure

For easier orientation the status tree diagram in Section 2.6 can be folded out.

Example Setting the audio parameters reproduce level,
15 ips tape speed, CCIR equalization,
tape type A, channel 2:

Step	Information on LC-Display
Give the programming lock [28] 1-2 counter-clockwise turns (hexagon-socket-screw key No. 2.5)	
Switch machine to STOP	L RANGE ./. dBm
√/NEXT	USER SET UP ALIGNMENT MODE
√/NEXT	ALIGNMENT AUDIO DECK AUX
√/NEXT	LVL REP 15.0 CCIR A CH1 <u>7</u> 2 CH2 72
>/CURSOR (changeover to CH 2)	LVL REP 15.0 CCIR A CH1 66 CH2 <u>6</u> 6
Set the desired output level with the UP/DOWN keys (indication in HEX)	LVL REP 15.0 CCIR A CH1 66 CH2 <u>F</u> 9
Save with STORE; press ^ 3 times, or: proceed to next with	L RANGE ./. dBm oder: TRB REP 15.0 CCIR A setting CH1 39 CH2 <u>3</u> 9

Indication of the set value

The gain of the individual amplifiers can be set within the range of 0 and the maximum in 255 steps (corresponds to 256 discrete values). These 256 values correspond to the range between the two limit positions of a potentiometer. The set value is shown as a hexadecimal value on the LC display (00 for 0 and FF for 255).

Examples of hexadecimal numbers

DECIMAL	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HEXADECIMAL	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

HEXADECIMAL	DECIMAL	% of FF res. 255
1A	26	10
33	51	20
4D	77	30
66	102	40
80	128	50
99	153	60
B3	179	70
CC	204	80
E6	230	90

Important !!

The hexadecimal number gives the user an indication of the range in which the amplifier operates. No conclusions can be drawn concerning the voltage values!

Altering the parameters

Pressing the UP/DOWN keys has the same effect as turning a potentiometer clockwise or counterclockwise. One key depressing corresponds to one step (within the range of 0 to 256). If this key is pressed continually, the range will be traversed in the corresponding direction.

In contrast to conventional potentiometer settings, the original value stored in RAM can be reproduced accurately at any time (e.g. by pressing the STOP key).

Storing the parameters

When the desired value has been found (for example line level 10 dBm = 2.5 V), it can be stored in RAM: press the STORE key.

For comparison purposes the hexadecimal amplifier settings can be recorded in a log.

Example

A812 Nr. NAB/CCIR TAPE A/B	SPEED								COM- MENTS-
	30ips		15ips		7.5ips		3.75ips		
	CH1	CH2	CH1	CH2	CH1	CH2	CH1	CH2	
REPRO LEVEL TREBLE BASS EQUAL.									
RECORD LEVEL TREBLE BIAS EQUAL.									
SYNC LEVEL TREBLE BASS EQUAL									

4.3 Reproduce Alignments

4.3.1 Preparatory Steps

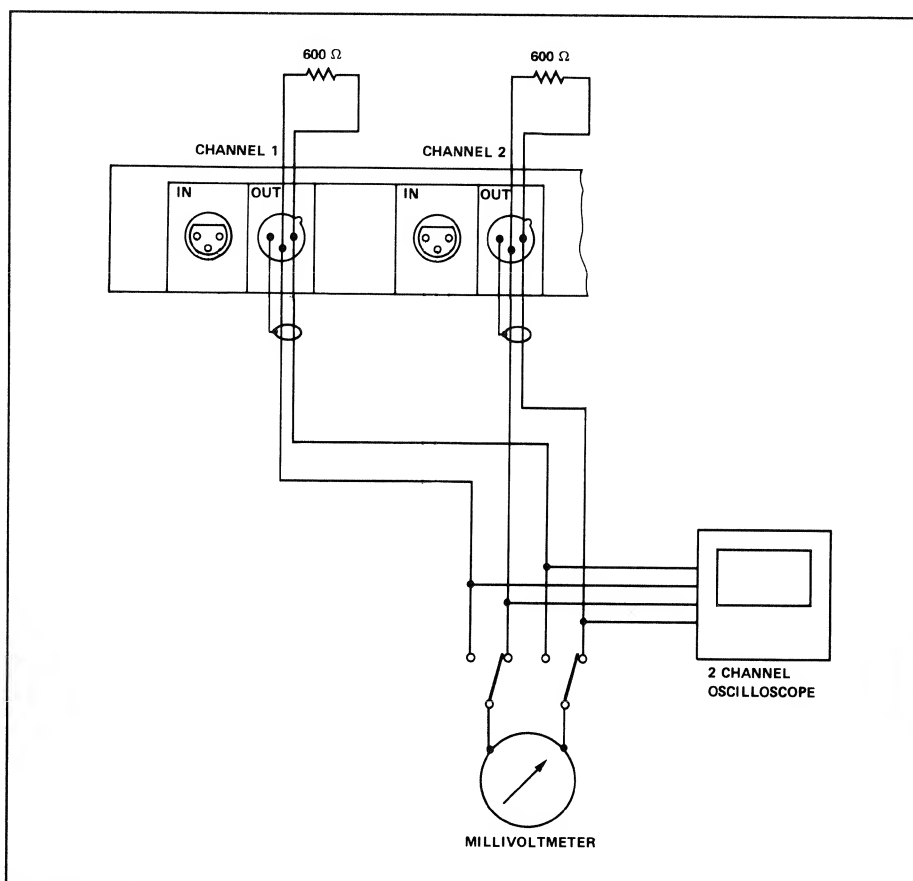


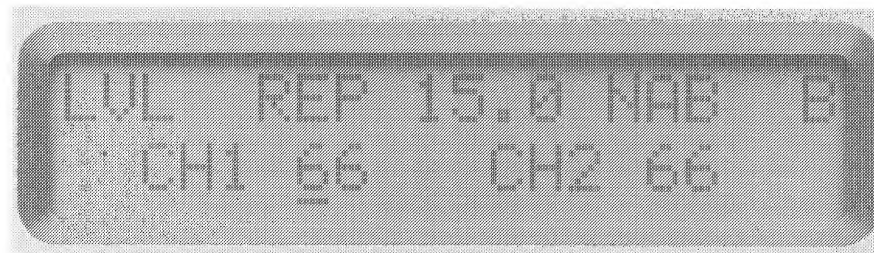
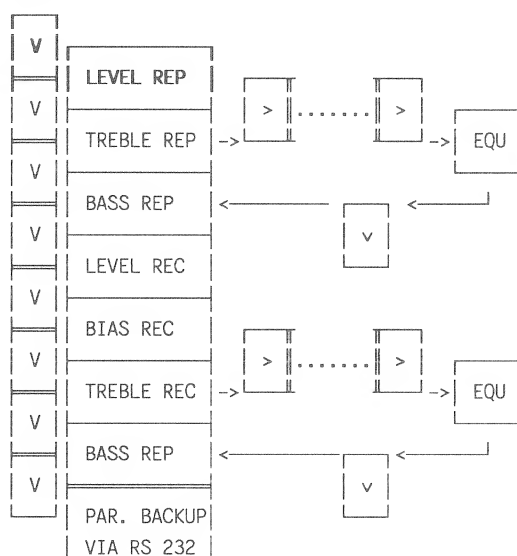
Fig. 4.3.1

- Connect the audio millivoltmeter to the line output channel 1. The lines outputs are to be loaded with 10 kohm (600 ohm or 200 ohm) for all measurements.
- Switch on the tape recorder.
- Select the preferred studio tape speed.
- Press SAFE and REPRO of channels 1 and 2. Release all UNCAL keys (calibrated level). On machines without VU-meter panel press MASTER SAFE.
- Mount the calibration tape for the corresponding equalization and spool forward to the LEVEL TONE section.

4.3.2 Reproduce Level Alignment ...

LVL REP 15.0 NAB B
CH1 66 CH2 66

Page to the LVL REP position by pressing v/Next, >/CURSOR, </CURSOR and ^/LOAD (possibly with the aid of the status tree diagram, Section 2.6, where also a step-by-step programming example can be found).



LVL	=	Level
REP	=	Reproduce
15.0	=	Tape Speed (15 ips)
NAB	=	Equalization
B	=	Tape Type
CH1	=	Channel 1
66	=	Parameter in Hexadecimal

Fig. 4.3.2

- Initially the cursor is located below the parameter for channel 1.
- Start the recorder in PLAY mode.
- By pressing the UP or DOWN key you can adjust the reproduce level to the desired line level.
- Press STORE.

- On stereo machines, switch the millivoltmeter to the line output channel 2. Position the cursor below the parameter for channel 2 by pressing >/CURSOR. The desired line level can now be set by pressing the UP or DOWN key.
- Press STORE.

4.3.3 Azimuth Alignment of the Reproduce Head.

- Spool the calibration tape forward to the AZIMUTH ALIGNMENT section. The level of this section is approx. 10 dB below the one of the level tone section. Switch the millivoltmeter to the line output channel 1.
- Start the tape recorder in play mode.

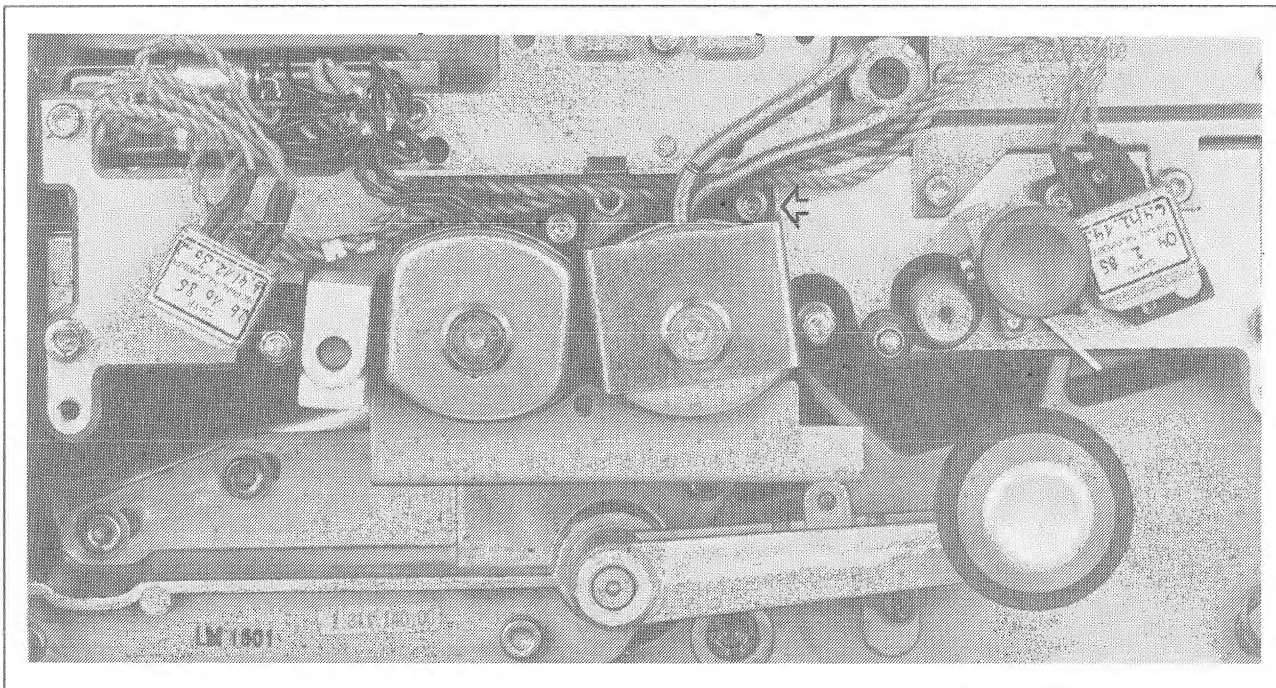


Fig. 4.3.3

Coarse adjustment

- While the recording with reference frequency is being played, adjust the azimuth of the reproduce head until the highest voltage is achieved.

Fine-adjustment

- Connect the line outputs of the two channels either to the inputs of a 2-channel oscilloscope. While the recording with 8, 10 or 16 kHz is being played, adjust for minimal phase difference of the output signals on the audio channels by means of azimuth alignment screw.

or

the inputs of an AF millivoltmeter with summing facility. While playing the recording with 8, 10 or 16 kHz adjust for maximum sum level of the audio channels by means of the azimuth alignment screw.

Important !! Always align first to the maximum level and then to minimum phase difference! If major corrections to the reproduce head azimuth are made, additional maxima but with lower level can occur.

Checking the level

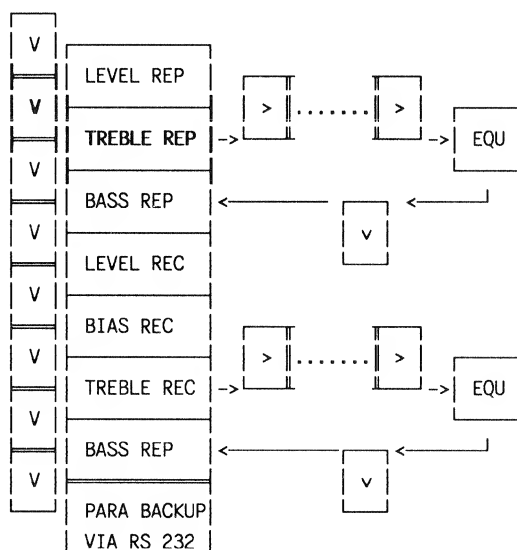
- Rewind the calibration tape to the LEVEL TONE section and switch to PLAY mode.
- Check the level of channels 1 and 2. Correct, if necessary.

4.3.4 Reproduce Frequency Alignment

Treble adjustment TREBLE REPRO

TRB REP 15.0 NAB B
CH1 31 CH2 31

- Spool the calibration tape forward to the FREQUENCY RESPONSE section 16 kHz (applies to 30 ips, 14 KHz for 15 ips, 12.5 kHz for 7.5 ips). The level of this section is approx. 20 dB (CCIR) lower than the one of the level tone section.
- Connect the millivoltmeter to the line output channel 1.
- Page to the TRB REP position by pressing the V/NEXT key.



- Initially the cursor is located below the parameter for CH 1.
- Start the recorder in PLAY mode.
- By pressing the UP or DOWN key you can adjust the reproduce level to the desired line level.
- Press STORE.
- On stereo machines switch the millivoltmeter to the line output channel 2. Position the cursor below the parameter for channel 2 by pressing >/CURSOR. The desired line level can now be set by pressing the UP or DOWN key.
- Press STORE.

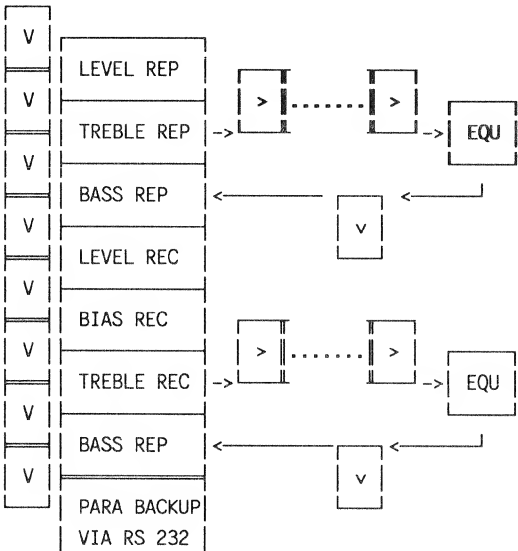
Modifying the standard
reproduce equalization
EQU REPRO: ...

EQU REP 15.0 NAB B
CH1 61 CH2 61

For special applications the reproduce frequency response can be changed by slightly shifting the time constants of the standard reproduce equalization.

As a rule the standard equalization should not be modified

- To change the standard reproduce equalization proceed as follows:
- Press LAST/NEXT to page to the TREBLE REPRO setting;
 - Repetitively press >/Cursors until EQU REP appears on the LC display.



- The equalization time constant is set in common for both channels.
- Start the tape recorder in PLAY mode.
 - Pressing the UP key increases the time constant, i.e. the transition frequency is shifted toward the lower frequency (and vice versa).
 - Press STORE when the optimum frequency response has been found.

THEORETICAL STANDARD REPRODUCE EQUALIZATION SETTINGS		
STANDARD TIME CONSTANT [μs]	CUT-OFF FREQUENCY [kHz]	STANDARD EQUALIZATION VALUES [HEX]
120	1,326	E5
90	1,768	A3
70	2,273	87
50	3,150	61
35	4,547	44
17,5	9,094	26

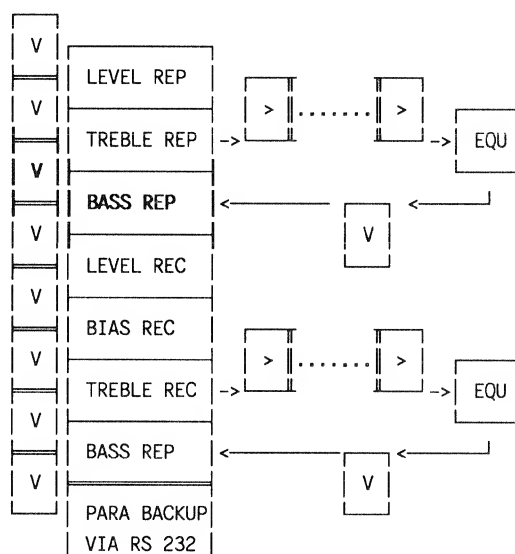
Bass alignment BASS REPRO ...

BAS REP 15.0 NAB B
CH 1 6A CH2 6A

- Spool the calibration tape forward to the FREQUENCY RESPONSE 63 Hz section.
- Connect the millivoltmeter to the line output channel 1.
- With the LAST/NEXT key page to the BAS REP position.

- Initially the cursor is located below the parameter for CH 1.
- Start the recorder in PLAY mode.
- By pressing the UP or DOWN key you can align to the optimum frequency response.
- Press STORE.

- On stereo machines switch the millivoltmeter to the line output channel 2. Position the cursor below the parameter for channel 2 by pressing >/CURSOR. The desired frequency response can now be set by pressing the UP or DOWN key.
- Press STORE.



Important !! If mono reference tapes are used for the reproduce alignment of stereo machines, strong fringing can occur at low frequencies. In order to achieve a linear frequency response, the reproduce alignment of the bass frequencies must either be repeated with tape (after the record alignment), or, if no record adjustments are planned, a calibration tape with the correct guard track width must be used!

4.3.5 Alignments for other Tape Speeds

The alignments for other tape speeds are basically performed in the same manner as outlined in Sections 4.3.2 through 4.3.4:

- Select desired speed
- Change over the equalization and tape type if necessary
- Mount the corresponding calibration tape.

Exceptions

The reproduce frequency response is aligned with different frequencies, depending on the tape speed:

[ips]	SETTING FOR	
	TREBLE REPRO [kHz]	BASS REPRO [Hz]
3,75	8	63
7,5	12,5	63
15	14	63
30	16	63

4.4 RECORD ALIGNMENTS

4.4.1 Preparatory Steps

- Mount unrecorded tape of new quality.

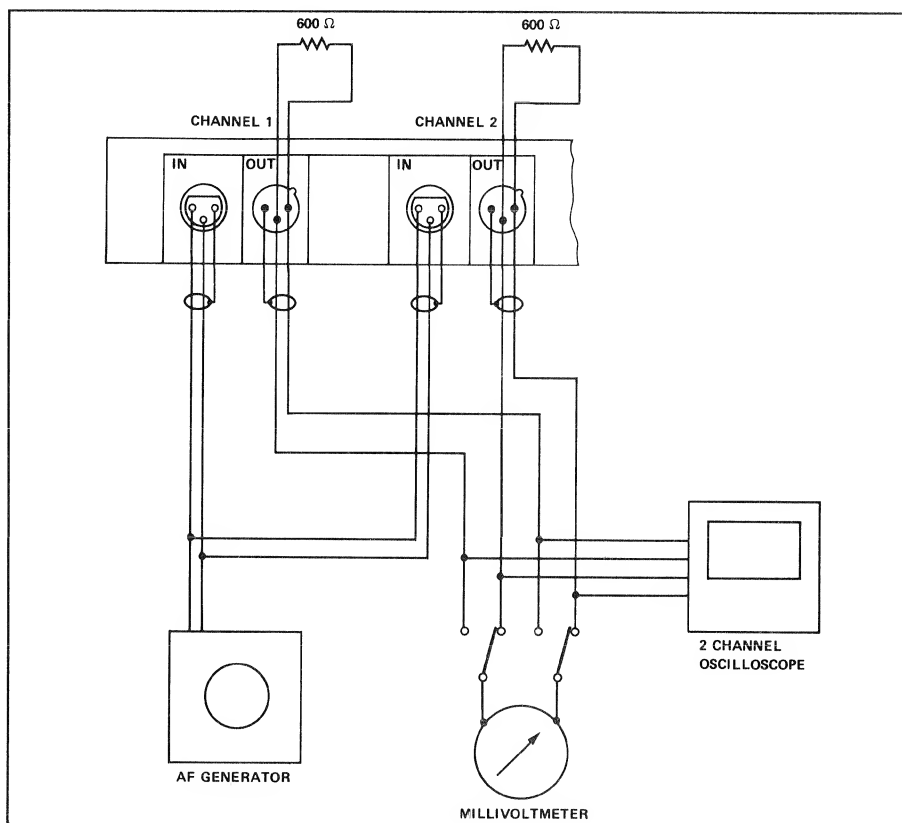


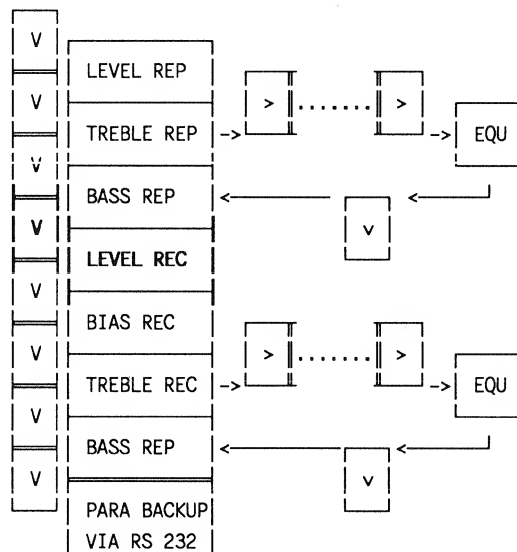
Fig. 4.4.1

- Connect the AF generator with 1 kHz and operating level to the line input channel 1 (channels 1 + 2 on stereo models). A reference frequency of 700 Hz can be fed when aligning to NAB standards.
- Switch on the recorder and press the READY and REP keys of channels 1 and 2.
- Release all UNCAL buttons (calibrated level).
- Select the preferred studio tape speed.

4.4.2 Record Level Prealignment ...

LVL REC 15.0 NAB B
CH1 30 CH2 30

Page to the LVL REC position by pressing the V/NEXT, ->/CURSOR, </CURSOR and V/LAST keys (possibly with the aid of a status tree diagram, Section 2.6, where also a step-by-step programming example can be found).



- Initially the cursor is positioned below the parameter for channel 1.
- Start the recorder in PLAY mode.
- The record level for the second channel can be set to the desired line level by pressing the UP or DOWN key.
- Press STORE.
- On stereo recorders switch the millivoltmeter to the line output channel 2. With ->/CURSOR position the cursor below the parameter for channel 2. The record level can now be set to the desired line level by pressing the UP or DOWN key.
- Press STORE.

4.4.3 Azimuth Alignment of the Record Head

If the bias has not been aligned yet, the parameters of two-channel or stereo recorders should be set to the same or similar values for both channels, refer to Section 4.4.4 (reason: the mechanical and the "magnetic" head gap of the record head are not in the same position; their distance depends on the magnitude of the bias current. For this reason an azimuth correction must be made after the final bias alignment).

- Set the AF generator to 10 kHz and decrease the level by 20 dB.
- Connect the millivoltmeter to the line output channel 1.
- Start the recorder in PLAY mode.

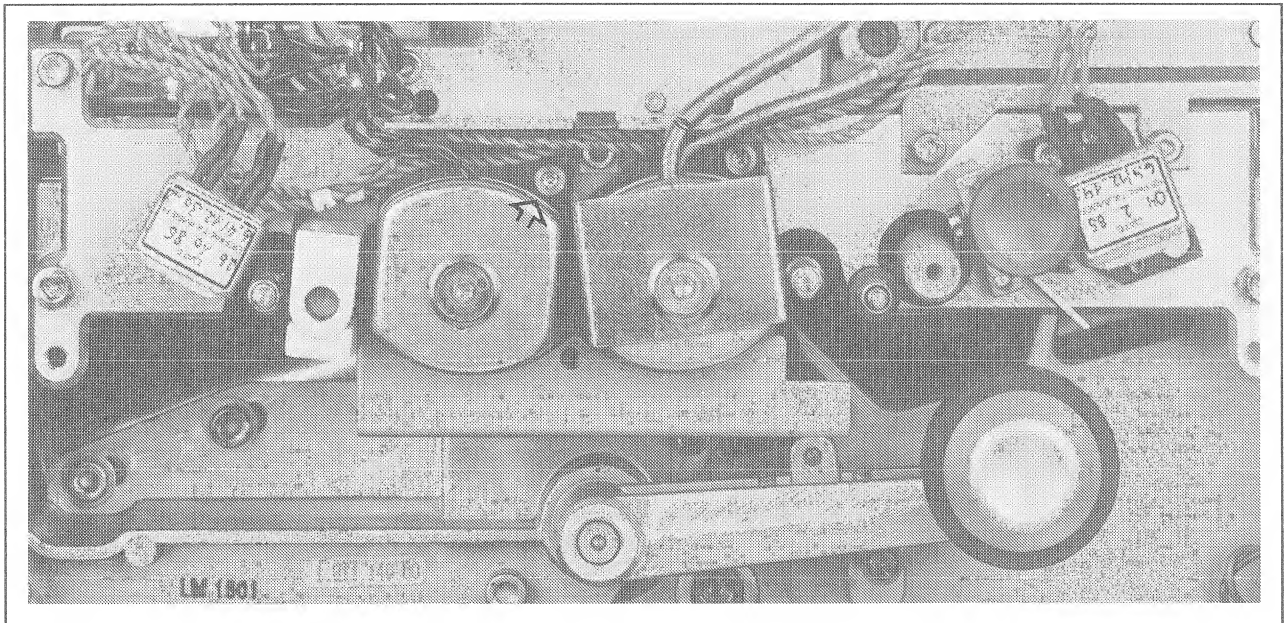


Fig. 4.4.2

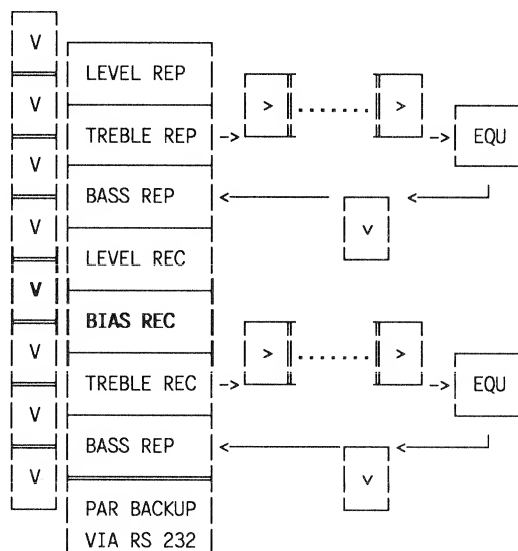
- Correct the azimuth of the record head by means of the azimuth alignment screw so that the highest output voltage and simultaneously the lowest level fluctuations are attained.

If major corrections of the azimuth alignment have been made, the record level prealignment (Section 4.4.2) should be repeated!

4.4.4 Bias Adjustment ...

BIA REC 15.0 NAB B
CH1 46 CH2 46

- Set the AF generator to 10 kHz and the level 20 dB below line level.
- Connect the millivoltmeter to the line output channel 1.
- Page to the BIA REC position by pressing V/NEXT.



- Initially the cursor is positioned below the parameter for CH 1.
- Start the machine in RECORD mode.
- The bias current is set to zero by repetitively (or continually) pressing the DOWN key.
- For searching the maximum output voltage, press the UP key, write down the value. Continue to press UP until the output voltage drops by approximately ΔU . ΔU depends on the tape speed and the tape type and can be determined from the BIAS table at the end of this Section.
- Press STORE.

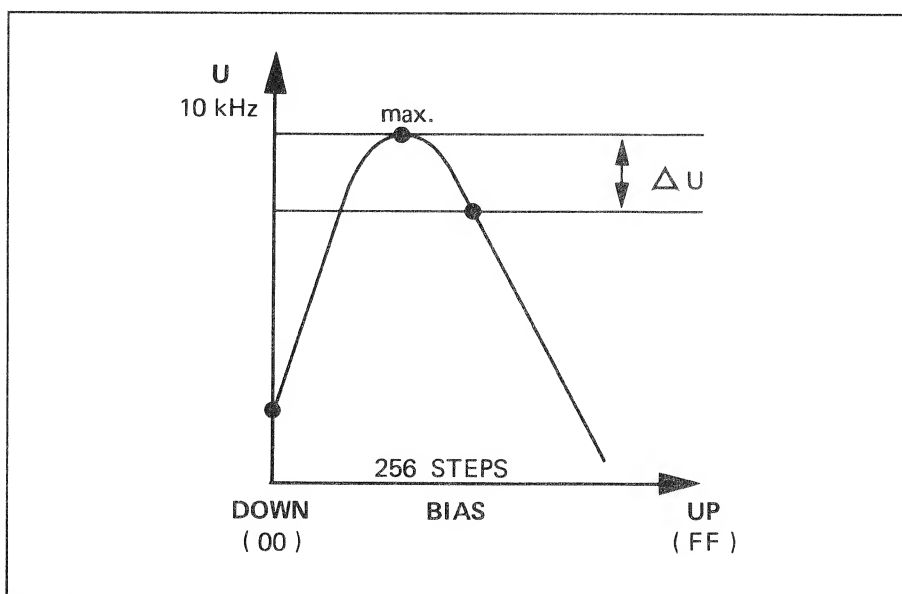


Fig. 4.4.3

- On stereo recorders, switch the millivoltmeter to the line output channel 2. Position the cursor below the parameter for channel 2 by pressing ->/CURSOR.
- Adjust the bias in the same manner as for channel 1.
- Press STORE.

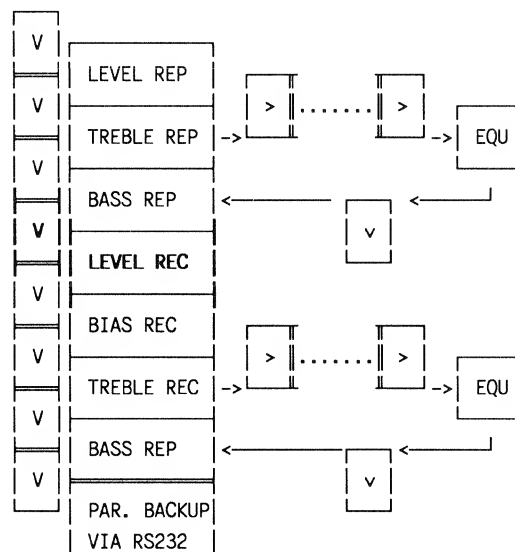
4.4.5 Azimuth Correction (for two-Channel Models)

- On stereo models align to minimum phase difference between the output signals of channels 1 and 2 with the aid of an oscilloscope and by carefully turning the azimuth alignment screw of the record head.

4.4.6 Record Level Adjustment ...

LVL REC 15.0 NAB B
CH1 30 CH2 30

- Set the AF generator to 1 kHz (700 Hz) and line level.
- Connect the millivoltmeter to the line output channel 1.
- Page to the LVL REC position by pressing NEXT/LAST.



- Initially the cursor is positioned below the parameter for channel 1.
- Start the machine in RECORD mode.
- Set the record level to the desired line level by pressing the UP or DOWN key.
- Press STORE.
- On stereo recorders, connect the millivoltmeter to the line output channel 2. Position the cursor below the parameter for channel 2 with >/CURSOR.
- The record level can be adjusted to the desired line level by pressing the UP or DOWN key.
- Press STORE.

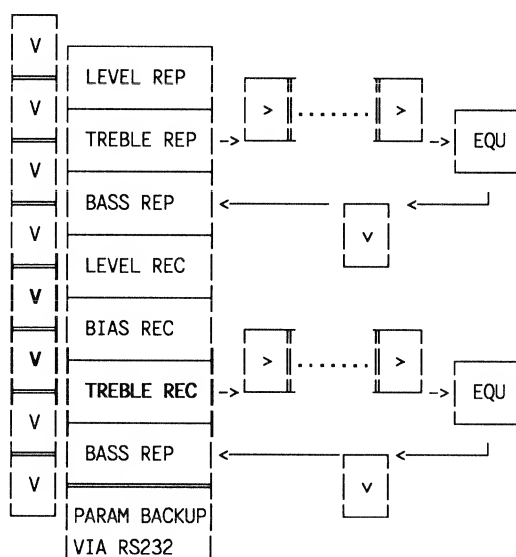
4.4.7 Record Frequency Alignment

- Set the AF generator to line level -20 dB.
- Connect the millivoltmeter to the line output channel 1.

Treble adjustment
TREBLE RECORD ...

TRB REC 15.0 NAB B
CH1 54 CH2 54

- Page to the TRB REC position by pressing LAST/NEXT.



- Initially the cursor is positioned below the parameter for CH1.
- Start the recorder in PLAY mode.
- Align for optimum treble frequency response by pressing the UP or DOWN key: the recommended, non-binding treble linearization settings for the corresponding tape speeds are listed in the following table:

Tape speed		Frequency setting
[cm/s]	[ips]	[kHz]
9,5	3,75	8
19	7,5	10
38	15	12,5
76	30	16

- Press STORE.

- On stereo recorders switch the millivoltmeter to the line output channel 2. Position the cursor below the parameter for channel 2 by pressing ->/CURSOR.
- Align for optimum treble frequency response by pressing the UP or DOWN key.
- Press STORE.

Changing the standard record equalization

EQU RECORD ...

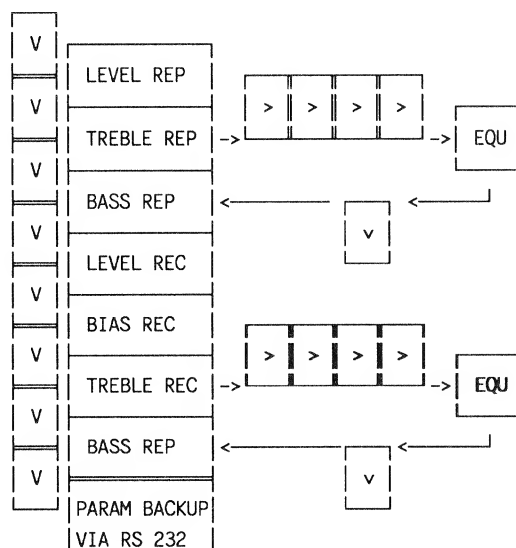
EQU REC 15.0 NAB B
CH1 99 CH2 99

For special cases it is possible to correct the record frequency response by slightly shifting the time constants of the standard record equalization.

As a rule the standard equalization should not be modified!

To change the record equalization proceed as follows:

- Page to the TREBLE REPRO position by pressing LAST/NEXT.
- Repetitively press ->/CURSOR until the following information appears on the LC display:



- The equalization time constant is in common set for both channels (only 1 parameter).
- Start the machine in RECORD mode.
- Pressing the UP key decreases the time constant, i.e. the transition frequency is shifted toward the higher frequencies (and vice versa).
- Press STORE when the optimum frequency response has been found.

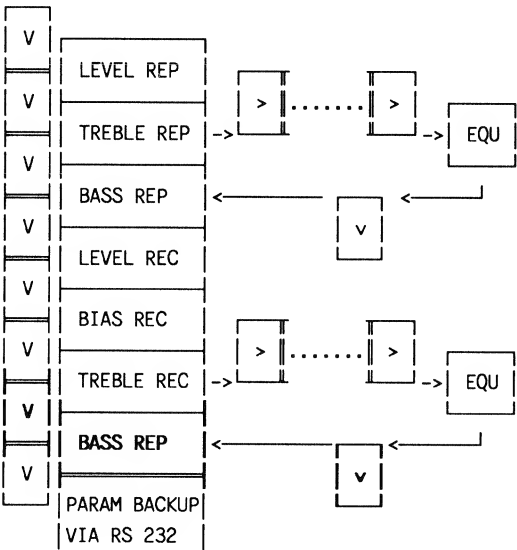
THEORET. STANDARD RECORD EQUALIZATION SETTINGS		
STAND.TIME CONST. [μs]	CUT-OFF FREQUENCY [kHz]	STANDARD EQUALIZATION VALUES
120	1,326	0E
90	1,768	4C
70	2,273	75
50	3,150	82
35	4,547	BA
17,5	9,094	DE

Bass alignment BASS
REPRO (with Tape):

BAS REP 15.0 NAB B
CH1_6A CH2 6A

For explanations refer to Section 4.2.1, note 2.)

- Connect the millivoltmeter to the line output channel 1.
- Page to the BAS REP position with LAST/NEXT.



- Initially the cursor is positioned below the parameter for CH1.
- Start recorder in PLAY mode.
- Align for optimum frequency response (below approximately 200 Hz) by pressing the UP or DOWN key.
- Press STORE.
- On stereo recorders, connect the millivoltmeter to the line output channel 2. Position the cursor below the parameter for channel 2 by pressing >/CURSOR.
- Align for optimum frequency response (below approximately 200 Hz) by pressing the UP or DOWN key.
- Press STORE.

4.4.8 Cross Talk Adjustment (only for 2-Channel and Stereo Models)

- Connect the AF generator (line level, 1 kHz) to the line input channel 1, and connect the millivoltmeter to the line output channel 2.
- Switch both channels to READY
- Start the machine in RECORD mode.
- Align for minimum output voltage with the aid of the CROSSTALK potentiometer (preamplifier in headblock, R14, Fig. 4.4.4).
- Repeat the same measurement with swapped channels.
- If pronounced differences occur, an optimum value has to be found for both channels.

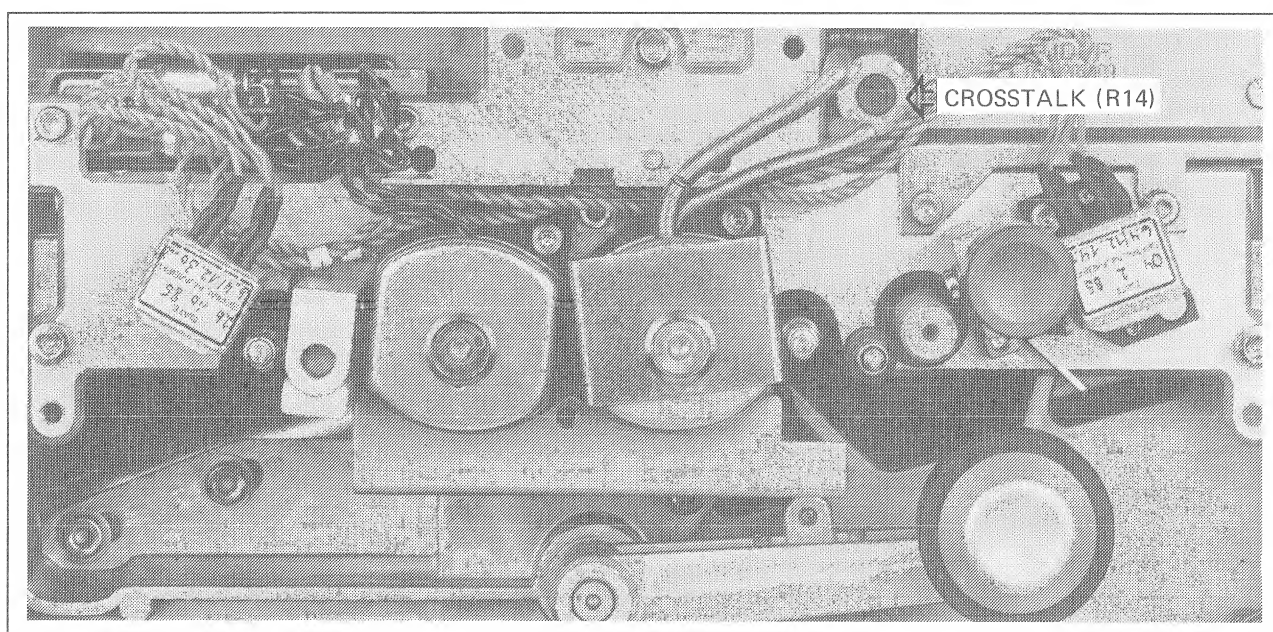


Fig. 4.4.4.

4.5 SYNC Reproduce Alignments

Sync reproduction is not intended for 3.75 ips. However, it is feasible if degraded reproduce quality is acceptable. The factory sets all SYNC parameters to 00 for this tape speed.

(The same parameters as for the reproduce alignment can be used in one of two ways: Select function F034. Switch REPRO/SYNC PARAM. SAME/INDIVIDUAL to SAME:

- Directly when calibrating the reproduce settings: The REPRO value is read simultaneously into the sync amplifiers when the STORE key is pressed.
- Or after the reproduce settings have already been calibrated: Recall all reproduce parameters (select) and write the corresponding parameter into the synch amplifiers by pressing the STORE key.

- Switch off the tape recorder and wait 5 seconds.
- Set the jumper on the REPRODUCE AMPLIFIER to NARROW (or WIDE if a wider frequency response is desired - in this case, however, strong cross talk from the record channel to the SYNC reproduce channel must be expected).

The settings for SYNC reproduction are analogous to the reproduce settings, with the following exceptions:

- On the VU-meter or channel selector select SYNC rather than REP (the LC display shows e.g. LVL SYN instead of LVL REP), the channel controllers are in all cases connected in parallel, even if they can normally be operated individually (function CH CONTR PAR/INDIV set to INDIV).
- The audio heads do not need to be realigned. However, the record and reproduce alignment must have already been completed.

Sync reproduce
level alignment: ...

LVL SYN 15.0 NAB B
CH1 62 CH2 62

Treble alignment: ...

TRB SYN 15.0 NAB B
CH1 50 CH2 50

- Alignment frequencies with jumper in NARROW position: 8 kHz for 7½ ips, 10 kHz for higher tape speeds.

Altering the reproduce
equalization

EQU SYNC ...

EQU SYN 15.0 NAB B
CH1 61 CH2 61

- The following table shows the theoretic standard equalization values:

THEORET. STANDARD RECORD EQUALIZATION SETTINGS		
STANDARD TIME . CONST. [μs]	CUT-OFF FREQUENCY [kHz]	STANDARD EQUALIZATION VALUES
120	1,326	E5
90	1,768	A3
70	2,273	87
50	3,150	61
35	4,547	44
17,5	9,094	26

Bass alignment BASS SYNC: ...

EQU SYN 15.0 NAB B
CH1 88 CH2 88

Studer tape recorders are normally calibrated with full-track reference tapes. However, frequency response errors are caused by tringing effects in stereo and two-channel models at low frequencies.

For this reason it is recommended to align the SYNC reproduce frequency response for low frequencies with tape, i.e. after the record alignment the sync reproduce frequency response should be repeated with a test tape prepared on the machine itself if no calibration tapes with correct track separation are available (approximately 3 minutes each: 1 kHz (NAB 700 Hz), 10 kHz (8 kHz for 7½ ips), 50 Hz).

4.6. Time code Reproduction

Basically no electrical adjustments are necessary for the time code reproduction. The adjustments are limited to the mechanical alignment of the left-hand and right-hand soundheads and are only necessary after the code heads have been replaced.

An alignment gauge should be available (part No. 10.010.001.28). Because the width of the code track is very small (0.38 mm), accurate alignment of the heads is absolutely essential.

4.6.1 Preparatory Steps

Check the heads for contamination and clean them, if necessary. The height of the head can be aligned to maximum reproduce level by means of a time code standard tape. The CODE READ/WRITE UNIT must be mounted on the extender board (No. 1.820.799.00) for this purpose.

CAUTION Switch off the recorder and wait at least 5 seconds before inserting or unplugging any circuit board!

Time code reproduction in spooling is not feasible as long as the CODE READ/WRITE UNIT is mounted on the extender board!

The reproduce level is measured (preferably with an oscilloscope) before the limiter on the test point TP; the ground terminal of the oscilloscope probe must be interconnected with terminal 21 of the extender board.

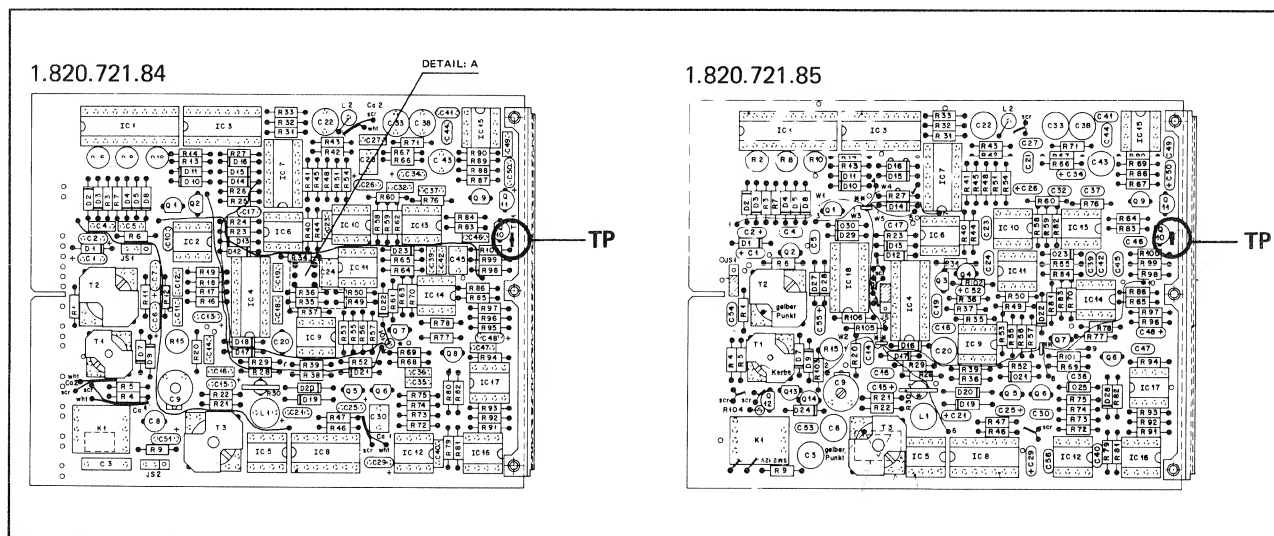


Fig. 4.6.1

- Mount the time code reference tape, recording inhibited (SAFE).
- Start the recorder in PLAY mode.

4.6.2 Checking the Soundheads

THIS PROCEDURE IS ONLY NECESSARY AFTER THE SOUNDHEADS HAVE BEEN REPLACED!

- Visually check the height of the soundhead, then measure the voltage on the test point TP.
- With your finger alternately press from the top and the bottom lightly against the tape edge (to the left of the left-hand code head). The height is correct if the voltage becomes smaller while the tape is being pressed in either direction.
- Program the spooling speed for producing library pancakes (LIBRARY WIND), depending on the selected nominal speed, to 0.2 m/s, 0.4 m/s, or 0.8 m/s (in the ALIGNMENT DECK block, see status tree diagram, Section 2.6); press LIBRARY WIND and spooling key </>, measure the voltage on the test point TP.
- With your finger alternately press from the top and the bottom lightly against the tape edge (to the right of the right-hand code head). The height is correct if the voltage becomes smaller while the tape is being pressed in either direction.

Should the measured voltage rise when the tape edge is pressed, the height of the heads must be corrected:

- On the left-hand code head with the aid of shims (0.1 mm, Part No. 1.062.210.08),
- On the right-hand code head by adjusting the swivel plate. Refer to Section 4.6.3!

4.6.3 Tape Guidance

The right-hand time code head (combination head) must be aligned perpendicularly to the plane of the tape path. Lateral or forward/backward tilt detected after the height alignment has been performed must be corrected by adjusting the swivel plate with the aid of the TC head alignment gauge set No. 10.010.001.28. Recheck the height alignment, if necessary!

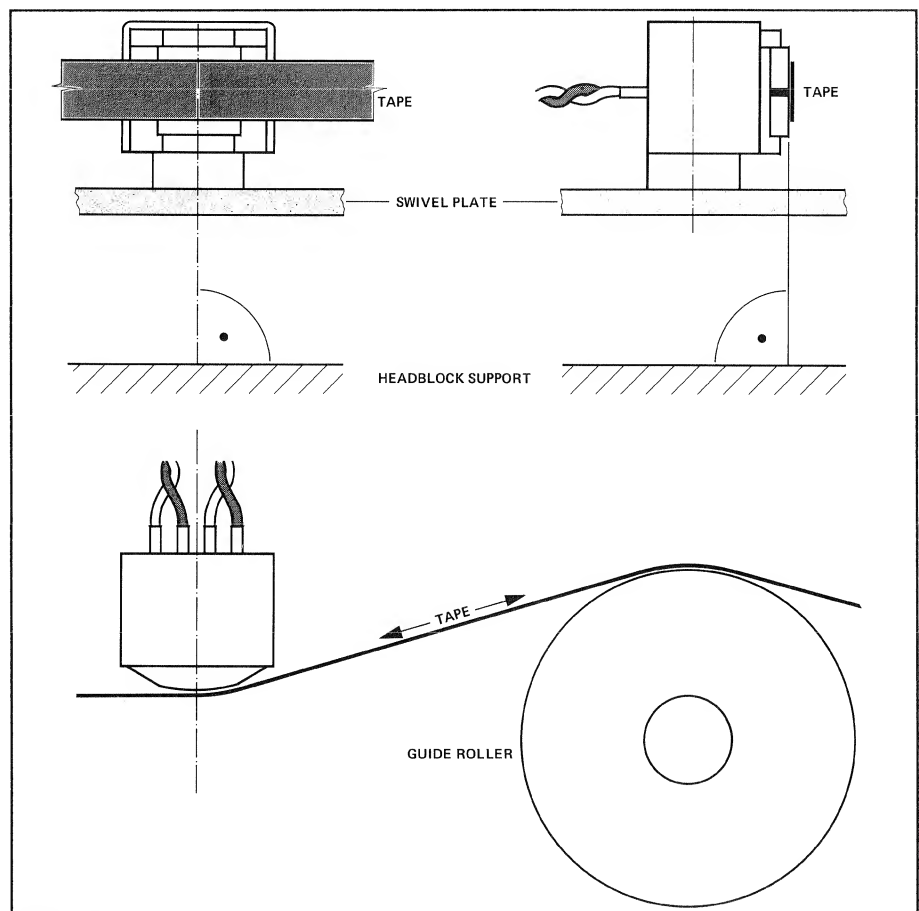


Fig. 4.6.2

4.7 Time code Recording

4.7.1 Preparatory Steps

The record alignment can be performed either with a time code signal or a square-wave signal. The advantage of the square-wave signal is that the image is visible on the oscilloscope. In this case, however, the CODE DELAY UNIT must be removed and the jumper JS2 on the CODE READ/WRITE unit must be changed to the BYPASS position.

- Mount the CODE READ/WRITE PCB on the extender board (part No. 1.820.799.00).

CAUTION:

Switch the recorder off and wait at least 5 seconds before you unplug or insert any PCBs! Time code reproduction in spooling mode is not feasible as long as the CODE READ/WRITE UNIT is mounted on the extender board!

- Switch on the recorder.
- Set the trigger level for the time code line input:
connect the square-wave generator (frequency 1 kHz) to the time code line input. The output voltage of the generator should be at the lowest value at which the line level input and the CODE LEVEL indicator lamp should still respond (factory setting: 0.5 Vpp, nominal input voltage approx. 150 mVpp). Adjust the trimmer potentiometer R15 on the TIME CODE READ/WRITE AMPLIFIER in such a way that the CODE LEVEL lamp just turns on.

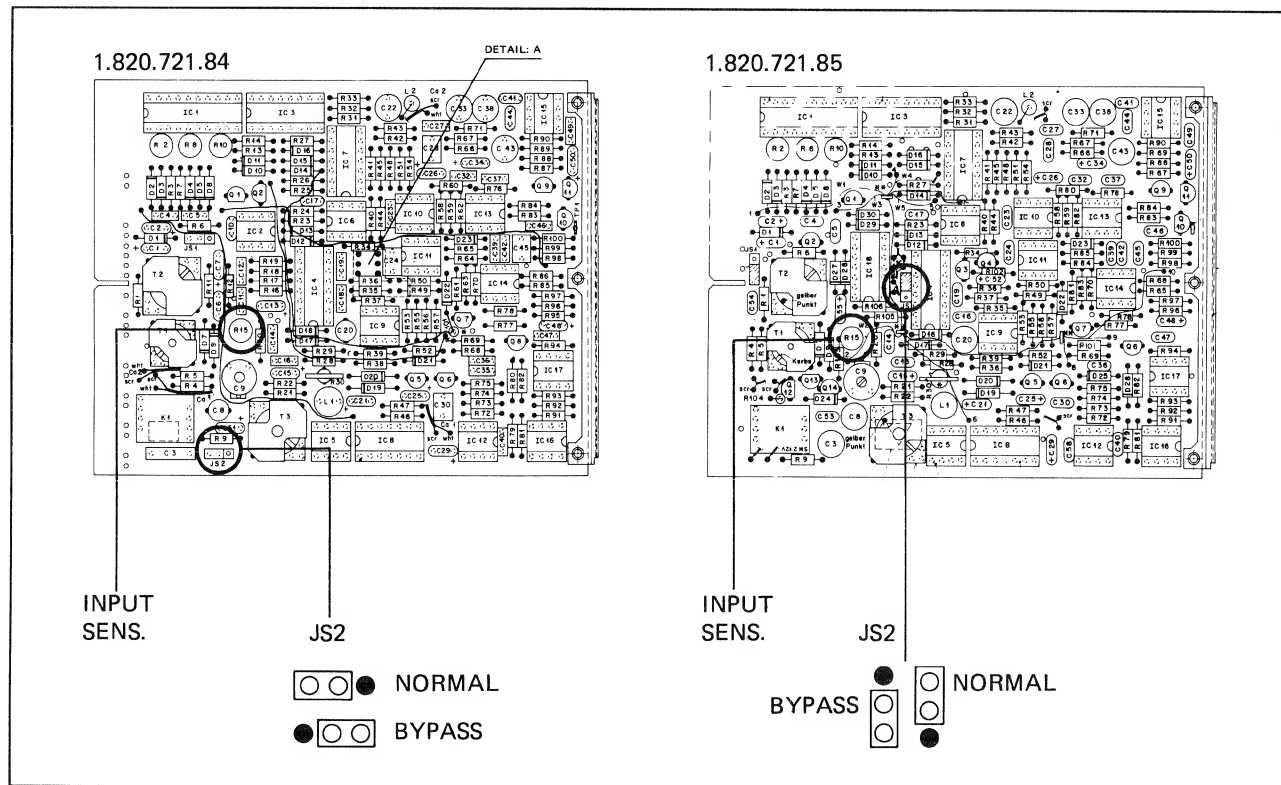


Fig. 4.7.1

- Check the soundheads for contamination and clean them, if necessary.

4.7.2 Adjusting the Head Height of the right-hand Code Head (Combination Head)

THIS PROCEDURE IS ONLY NECESSARY AFTER THE TIME CODE HEADS HAVE BEEN REPLACED!

- Mount an unrecorded tape of new quality
- Set the bias trimmer C9 to the middle position
- Turn the record level trimmers R2 (7½ ips), R8 (15 ips) and R10 (30 ips) counterclockwise from the limit position by 1/3 of the maximum angle of rotation (approximately 90°).
- Remove the CODE DELAY UNIT, set the jumper JS2 to the BYPASS position (if not already there, see Fig. 4.7.1).
- Select 7.5 ips tape speed.
- Connect the square-wave generator, 2 Vpp, 1 kHz, to all three line inputs and make a recording with a duration of approximately 10 to 20 seconds.
- Apply iron oxide spray:
(MAGNETIC IRON OXIDE by AERSOLS INTERNATIONAL LTD., STUDER No. 10.555.001.00),
to a few centimeters of the recorded tape, coated side facing upward.
- After the suspension has dried, measure the track symmetry with the aid of a measuring magnifier (STUDER No. 10.258.006.00).

Correct the head height if the deviation is greater than ± 0.05 mm.

Repeat the recording and measurement process until track symmetry is achieved.

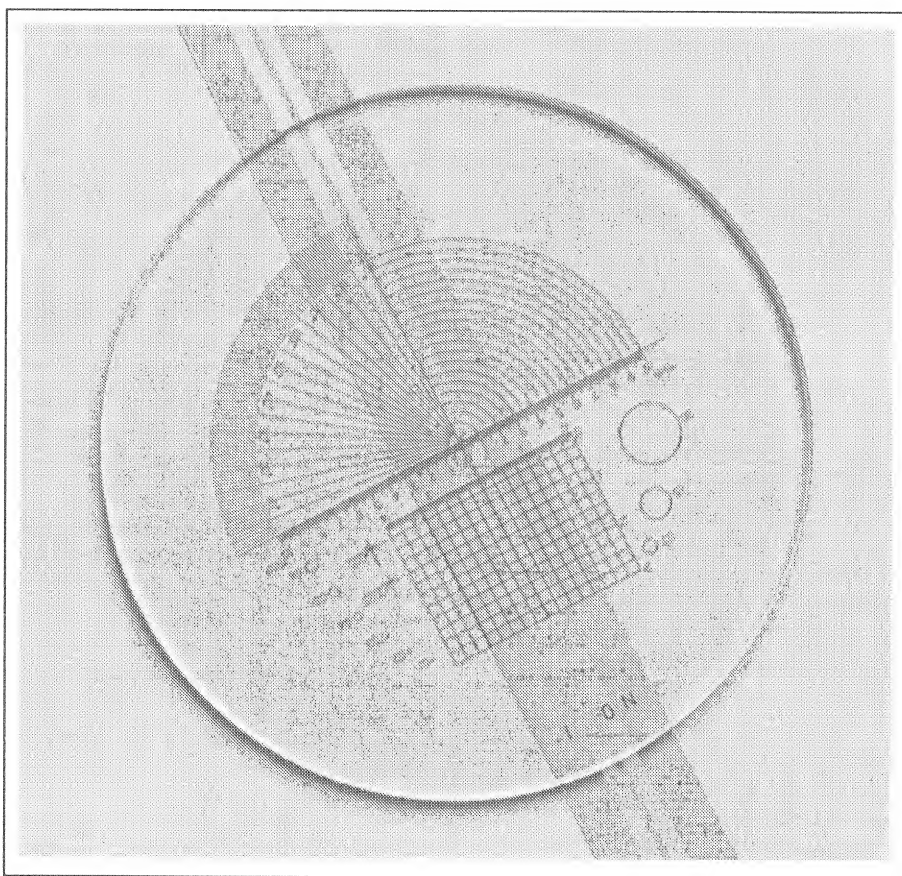


Fig. 4.7.2

- It is necessary to check the tape guidance after the head height has been corrected (4.6.3).

4.7.3 Preparatory Steps

Press time code SAFE button (audio recording inhibited = SAFE)

- Connect the oscilloscope to the test point TP, connect the ground terminal of the oscilloscope probe to terminal 21 of the extender board.
- Mount the time code reference tape, spool forward to the second test section (time code, 729 nWb/m), start the recorder in PLAY mode, and measure the signal amplitude (amplitude, peak-to-peak) with an oscilloscope on the test point TP. Write down the measured value. (Approximate value: 180 - 300 mVpp at 15 ips)

If no time code reference tape is available, this measurement can be made on a make-shift basis with the aid of a full-track audio tape. Procedure:

- Connect the oscilloscope to the test point TP via an RC element as illustrated in Fig. 4.7.3.

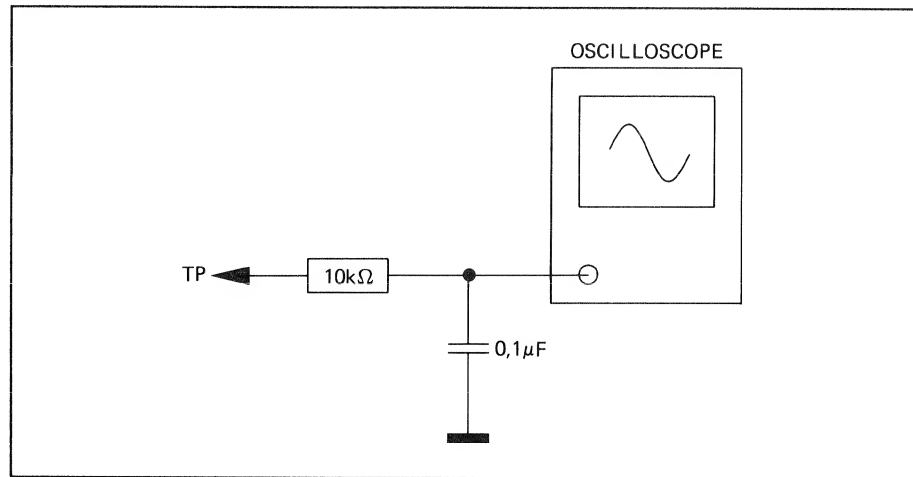


Fig. 4.7.3

- Play the level tone section, 1 kHz, measure and write down the measured value.
- Multiply the measured value by the factor
 $k = 1.3$ if a reference tape with a flux of 200 nWb/m is used,
 or
 $k = 0.81$ if a reference tape with a flux of 320 nWb/m is used,
 to maintain the time code reproduce level (peak-to-peak) for a tape flux of 729 nWb/m pp.
- Write down the computed value.

4.7.4 Bias Adjustment

- Mount an unrecorded tape of new quality;
- Adjust the bias timer C9 to minimum capacitance.
- Turn the record level trimmers R2 (7½ ips), R8 (15 ips) and R10 (30 ips) counterclockwise from their CCW limit position by 1/3 of the maximum angle of rotation (approximately 90°).
- Press the time code READY key.

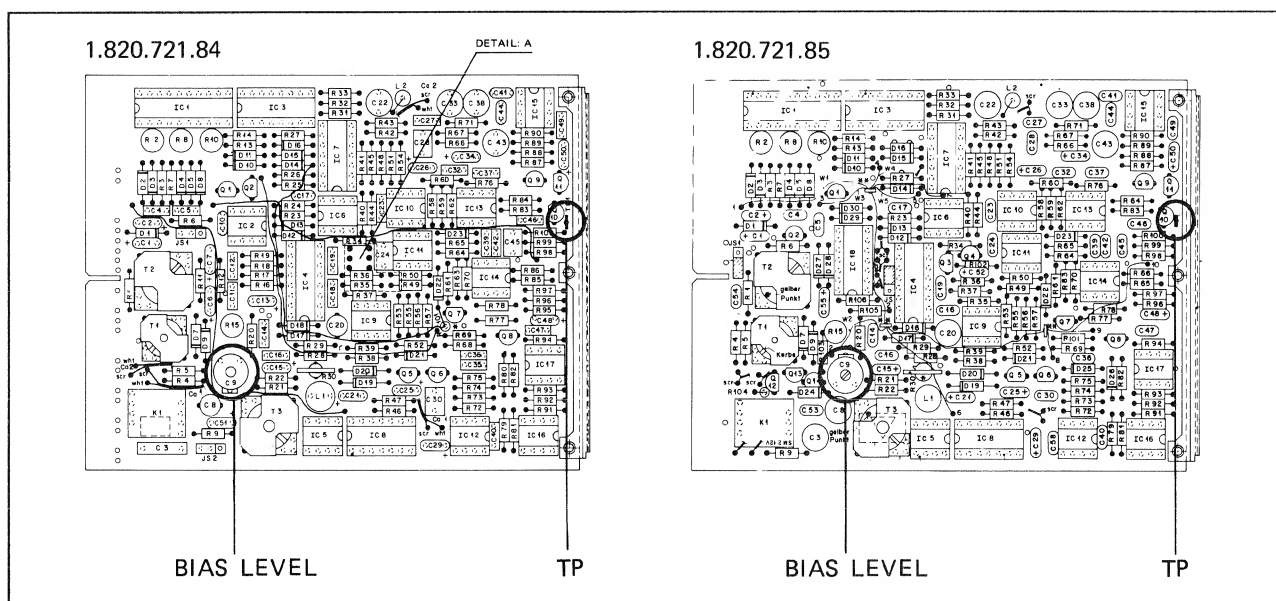


Fig. 4.7.4

- Connect the square-wave generator (frequency 1 kHz; remove the CODE DELAY UNIT, set JS2 on the CODE READ/WRITE UNIT to the BYPASS position) or connect the time code generator with approximately 2 Vpp to the time code line input.
- Start the machine in RECORD mode. During the recording increase the capacitance of C9 step by step in intervals of 10 seconds until the rotor has travelled approximately 90°. A recording with different bias values is produced in this manner.

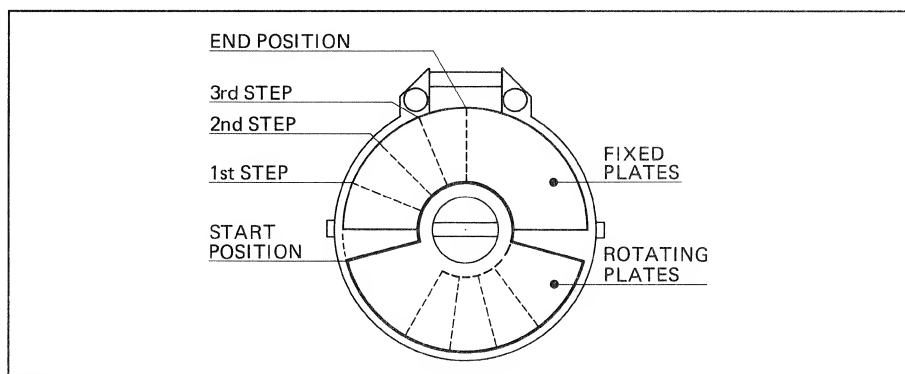


Fig. 4.7.5

- Rewind to the start of the recording.

- Connect the oscilloscope to the test point TP, connect the ground terminal of the oscilloscope probe to terminal 21 of the extender board.
- Switch the machine to PLAY mode.
- During the playback write down the position in which the output amplitude is the highest.
- Restore C9 to this position.
- Restart the machine in record mode. Adjust C9 in small increments to the previously noted position.
- Determine the optimum position of C9 through several experiments, i.e. maximum amplitude and steep signal edges.

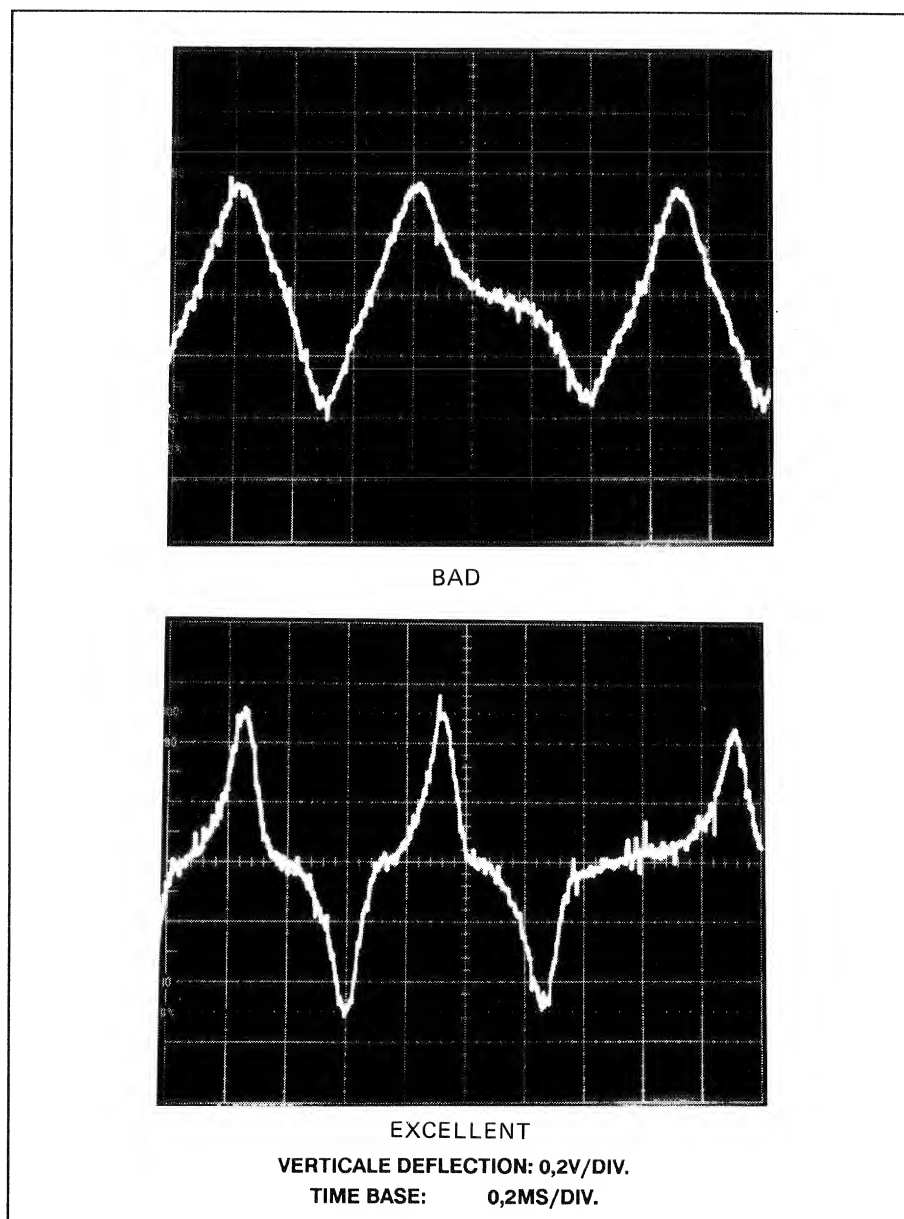


Fig. 4.7.6

4.7.5 Record Level Alignment

With the trimmer potentiometers R2 (for 7.5 ips and also for 3.75 ips if the function F410 (time code special) has been selected (see status tree diagram, Section 2.6). If necessary optimize the level to the preferred tape speed (3.75 or 7.5 ips. With R8 (for 15 ips) and R10 (for 30 ips) the record level is aligned in such a way that the reproduce level determined according to 4.7.3 is available on the test point TP.

Procedure (for each tape speed)

- Mount an unrecorded, new quality tape.
- Connect the oscilloscope to test point TP (ground: to terminal 21 of the extender board).
- Start the machine in RECORD mode and record a square-wave signal for time code for 20 seconds, approx. 2 Vpp, 1 kHz (CODE DELAY UNIT removed, JS2 on the CODE READ/WRITE UNIT in the BYPASS position).
- Rewind to the start of the recording, switch the recorder to PLAY mode. The voltage on test point TP should be the same as the value determined according to 4.7.3.
- Repeat this procedure several times until this value is attained.

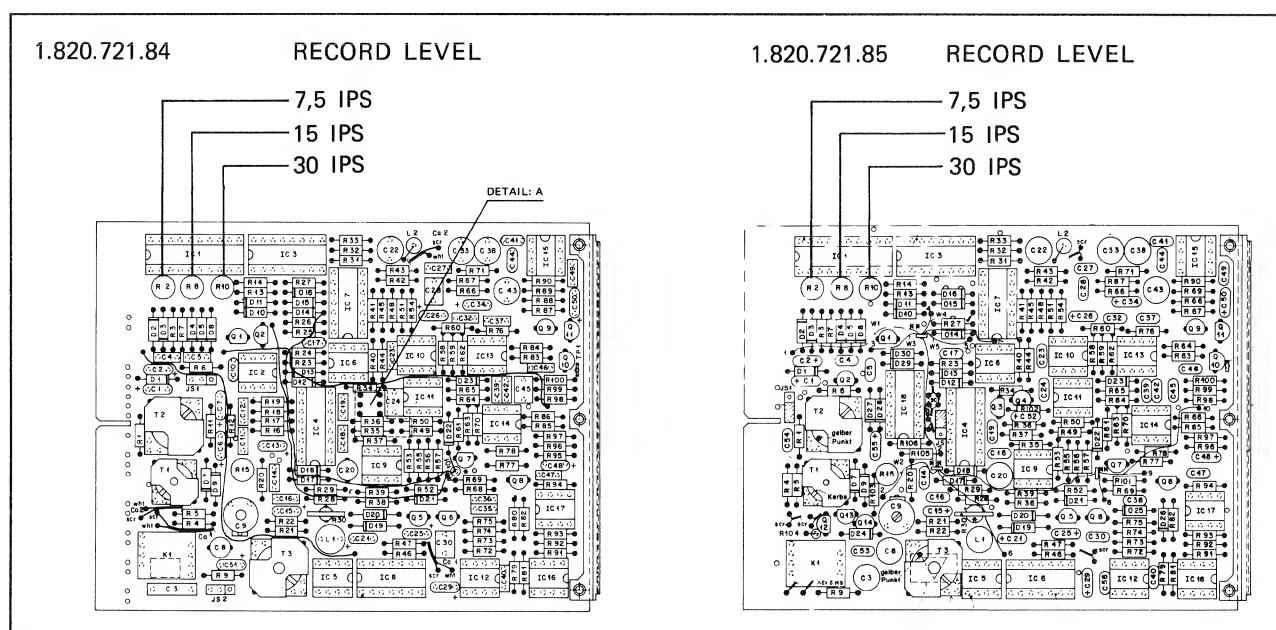


Fig. 4.7.7.

4.7.6 Checking the Head Gap Position, Reproduce

- Install the CODE DELAY UNIT.
- Connect the time code line output and the line output of one of the two audio channels to the MASTER or the SLAVE input of a STUDER TLS 4000 synchronizer (or a time code reader with offset display facility).
- Mount the time code reference tape, spool to the first section (full-track time code) and start the recorder in PLAY mode, tape speed 15 ips.
- Measure the offset between the audio channel and the time code channel.

- The offset should not exceed 2 ms (for 30 ips), 4 ms (for 15 ips) or 8 ms (for 7.5 ips). If the offset is greater, it can be decreased by turning the left-hand combination head.
- After this adjustment has been made it is necessary to check the erase depth of the audio channels! A compromise between maximum erase efficiency and minimum time code offset may have to be made.

If the head wrap is correctly adjusted and if the erase efficiency of the audio channels is adequate, the offset values are usually within the above tolerances. Verification with the above mentioned equipment is, therefore, not absolutely necessary.

4.7.7 Checking the Head Gap Position, with Tape

- Connect the time code generator in parallel to an audio channel and to the time code channel. Make a recording with a duration of approximately one minute.
- Rewind to the start of the recording and measure the offset between the audio channel and the time code channel with the same equipment as in 4.7.6.
- The offset should not exceed 2 ms. If the offset is larger, it can be decreased by turning the right-hand combination head.

Important !! After the right-hand combination head has been aligned (time code record head) a new recording must be made for checking the head gap position!

The tape should pass approximately symmetrically across the head face, it should not be drawn across one of the edges!

4.7.8 Checking the Time Code Reproduction in Spooling Mode

- Install the CODE DELAY UNIT, or if none is available, set the jumpers JS2 on the CODE READ/WRITE UNIT to the BYPASS position.
- Install the CODE READ/WRITE UNIT without extender board.
- Connect the time code generator to the TC line input.
- Select 7.5 ips tape speed.
- Make a recording with a duration of approx. 10 minutes.
- Connect the time code reader to the TC line output.
- Switch the recorder to spooling mode. The recorded time code should be read accurately even at maximum spooling speed in either direction.

If the time code is not read correctly (too many drop-outs), the right-hand time code head should be cleaned or possibly be repositioned. (Also realign the lifter).

Cleaning the right-hand code head:

- With a hard brush remove the deposits in the grooves and clean the head with soundhead cleaner.

Checking the headface

Of the right-hand time code head

- Color the right-hand side of the right-hand time code head with a grease pen (part No. 10.401.001.01).
- Actuate the tape lifter manually and press one of the spooling keys. Check the headface after approx. 1 to 2 minutes of spooling time. The headgap should be within the section wiped by the tape. If this is not the case, check the lifter alignment according to 3.3.7 or adjust the time code head at the expense of the delay time (lightly correct the offset measurement).

Important !! During the spooling process the CODE DELAY UNIT is automatically bypassed, i.e. the offset in spooling mode is always much greater than in play mode.

4.8 External Storage of the Audio Parameters

For copying the audio and tape tension parameters of the RAMS to an external storage medium, the tape recorder must be equipped with the serial interface 1.810.751. Two copying methods are feasible: either by means of a suitable personal computer directly on a diskette, or on audio tape (preferably with the tape recorder whose parameters are to be stored).

With a special command the data stored in RAM can be compared with the saved data in order to verify that they have been correctly transmitted.

The terms SAVE (data backup) for external storage of the data from the tape recorder RAM, and VERIFY for comparing the externally stored data with those in the tape recorder RAM, and LOAD for transferring the data from the external storage medium into the tape recorder RAM are used in the following description.

4.8.1 SAVING the Data on Tape

When the SAVE command is initiated on the tape recorder, the microprocessor serially transmits the stored audio and tape tension data to terminals 4 and 6 of the SMPTE/EBU BUS/RS232 connector.

These terminals are balanced and floating, the level is approx. 9 Vpp. In order to match the output level to the current source, a load impedance (approx. 47 ohm) must be connected between pins 4 and 6 (results in a voltage of approx. 2.5 Vpp). For safety reasons the complete set of data is transmitted three times. The entire SAVE process takes approx. 65 seconds.

Procedure

- Connect the input of the tape recorder to the SMPTE/EBU BUS / RS232 connector:

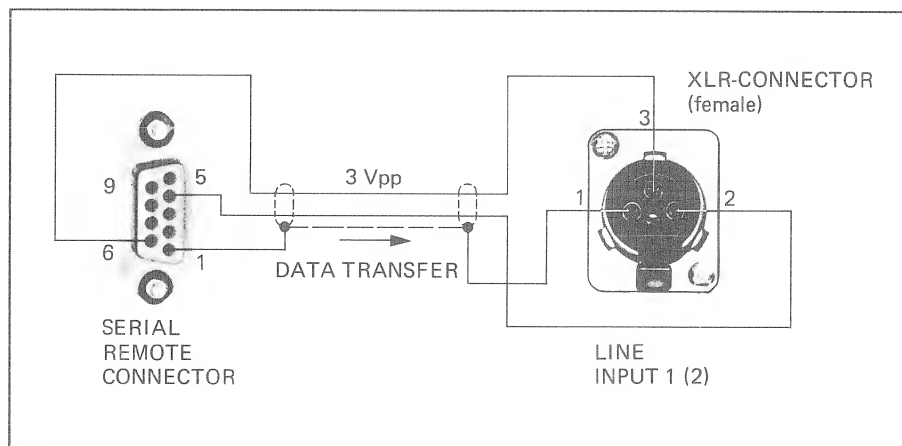


Fig. 4.8.1

- Select the tape speed (7.5 ips)
- Mount a tape of corresponding length (at least 65 seconds).
- Press the READY key of the desired recording channel.
- With the aid of a hexagon-socket-screw key No. 2.5, give the programming lock [28] approx. 1 - 2 counterclockwise turns
- Repetitively press V/NEXT until the LC display contains the following information:

PARAM BACKUP ON TAPE
V ^ VERIFY SAVE LOAD

The cursor is located between the two arrows (in a protected position).

- Press >/CURSOR twice, the cursor is now positioned below SAVE.
- Start the recorder in play mode with PLAY + REC.
- Press STORE, the LC display contains the following information:

DATA TRANSMISSION IN
PROGRESS PLS WAIT

The data are recorded on tape.

- Measure the reproduce level with tape on the audio line output. If necessary change the impedance so that approx. 2.5 Vpp are available at the output. Or, if available, adjust the record level with the RECORD LEVEL potentiometer.
- Make the final recording.

Upon completion of the data transmission the following message is displayed:

DATA TRANSMISSION
COMPLETED

If an error has occurred during the data transmission (e.g. due to a transient line voltage failure), the following message is displayed:

DATA TRANSMISSION
FAILED

In this case press V/NEXT or ^/LAST to retrieve the following menu:

PARAM BACKUP ON TAPE
^_v VERIFY SAVE LOAD

- The process can be repeated, if desired, or you can return to the starting position by pressing ^/LAST.

4.8.2 VERIFYING the Data Stored on Tape

When the VERIFY (verify the RAM data with the data on the external storage medium) command is entered on the tape recorder, the microprocessor serially receives all stored audio data (pins 4 and 6 of the SMPTE/EBU BUS/RS232 connector).

These terminals are balanced and floating. The level should be approx. 2.5 Vpp.

- Procedure**
- Connect the output of the tape recorder to the socket SMPTE/EBU BUS/RS232:

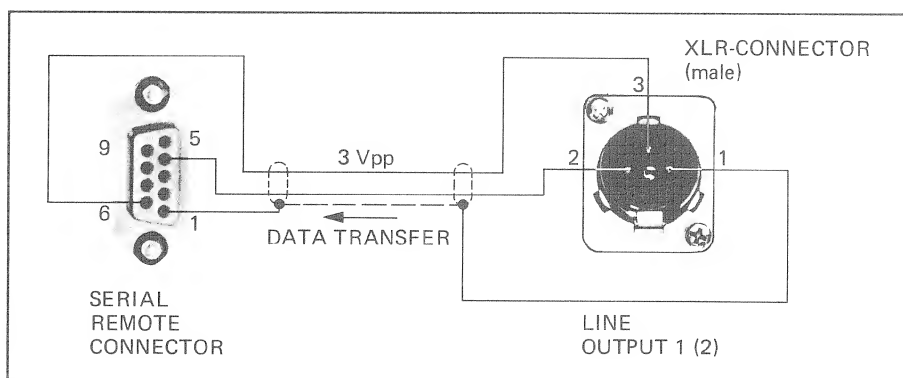


Fig. 4.8.2

- Select the same tape speed that has been used for recording the data.
- Mount the tape containing the stored parameters.
- Adjust the reproduce level: The reproduce level should be not much less than 2 Vpp. If necessary adjust the level.
- With the aid of a hexagon-socket-screw key No. 2.5, give the programming lock [28] 1 to 2 counterclockwise turns.

- Repetitively press V/NEXT until the LC display shows the following menu:

PARAM BACKUP ON TAPE
^ _ v VERIFY SAVE LOAD

The cursor is now located between the two arrows (in a protected position).

- Press >/CURSOR once, the cursor is now positioned below VERIFY.
- Press STORE, the LC display contains the following information:

WAITING FOR DATA INP
PLS SEND DATA

- Press PLAY to start the recorder in play mode. The LC display shows the following information as soon as valid data are decoded:

VERIFYING DATA
PLEASE WAIT

After the data comparison has been successfully completed, the following message is displayed:

VERIFICATION SUCCE-
FULLY COMPLETED

If the data do not agree, the following message is displayed:

VERIFICATION FAILED
PLEASE REPEAT

The following message is displayed if:

Play has not been started within approx. 15 seconds, and

No valid data have been detected within approx. 30 seconds:

NO DATA FOUND

In all cases the key ^/LAST switches back to the following menu:

PARAM BACKUP ON TAPE
^ _ v VERIFY SAVE LOAD

This procedure can be repeated, if necessary, or with ^/LAST you can page back to the starting position.

4.8.3 LOADING the Data from Tape

When the LOAD command (loading data from the external storage medium) is entered on the tape recorder, the microprocessor serially receives all stored audio data and loads them into RAM. The same connection cable can be used as for VERIFY. Normally the first of the three identical data blocks on the external storage medium suffices for loading the data. However, if errors occur during the loading operation, the processor accesses the second or the third data block.

Procedure

- Same as in 4.8.2 until the following menu is displayed:

PARAM BACKUP ON TAPE
^_v VERIFY SAVE LOAD

- Press >/CURSOR three times, the cursor is now positioned below LOAD.
- Press STORE, the LC display contains the following information:

WAITING FOR DATA
PLS SEND DATA

- Press PLAY to start the machine in play mode. The LC display contains the following information as soon as valid data are detected:

DATA LOADING IN
PROGRESS - PLS WAIT

Upon successful completion of the load operation the following message is displayed:

DATA LOADING
COMPLETED

If read errors have occurred (e.g. transient line voltage failure, contaminated soundheads) the following message is displayed:

DATA LOADING FAILED
DEFAULT PARAM LOADED

Repeat the process, or if desired, continue to work with the default parameters.

The following message is displayed if:

Play has not be started within approx. 15 seconds,
and

No valid data have been detected within approx. 30 seconds:

NO DATA FOUND

The old audio and tape tension reference data are still available in the RAM.

In all cases the key ^/LAST switches back to the following menu:

PARAM BACKUP ON TAPE
^_v VERIFY SAVE LOAD

This procedure can be repeated, if necessary, or with ^/LAST you can page back to the starting position.

4.8.4 SAVING the Data by Means of a Personal Computer

When the SAVE command is entered on the tape recorder, the microprocessor serially transmits the stored audio and tape tension data to the SMPTE/EBU BUS/RS232 connector. For safety reasons the complete set of data is transmitted three times.

Procedure

- Connect the personal computer to the SMPTE/EBU BUS / RS232 connector: Same as described in 2.8.5. In addition the software handshake mode (X ON/X OFF protocol) must be activated.
- With the aid of a hexagon-socket-screw key No. 2.5, give the programming lock [28] approx. 1 - 2 counterclockwise turns
- Repetitively press V/NEXT until the LC display contains the following information:

PARAM BACKUP RS 232
 ^_v VERIFY SAVE LOAD

The cursor is located between the two arrows (in a protected position).

- Press >/CURSOR twice, the cursor is now positioned below SAVE.
- Press STORE, the LC display contains the following information:

DATA TRANSMISSION IN
 PROGRESS - PLS WAIT

The data are transmitted to the personal computer.

Upon completion of the data transmission the following message is displayed:

DATA TRANSMISSION
 COMPLETED

The received ASCII data can be recorded on diskette.

If an error has occurred during the data transmission (e.g. due to a transient line voltage failure), the following message is displayed:

DATA TRANSMISSION
 FAILED

In either case press V/NEXT or ^/LAST to retrieve the following menu:

PARAM BACKUP RS 232
 ^_v VERIFY SAVE LOAD

The process can be repeated, if desired, or you can return to the starting position by pressing ^/LAST.

4.8.5 VERIFYING the Data in the Personal Computer.

When the VERIFY (verify the RAM data with the data on the external storage medium) command is entered on the tape recorder, the microprocessor serially receives all stored audio data (pins 4 and 6 of the SMPTE/EBU BUS/RS232 connector).

Procedure

- Start up and connect the personal computer to the SMPTE/EBU BUS/RS232 connector:
Same as described in 2.8.5 In addition the software handshake mode X ON/X OFF protocol must be activated.
- With the aid of a hexagon-socket-screw key No. 2.5, give the programming lock [28] 1 to 2 counterclockwise turns.
- Repetitively press V/NEXT until the LC display shows the following menu:

PARAM BACKUP RS 232
^_v VERIFY SAVE LOAD

The cursor is now located between the two arrows (in a protected position).

- Press >/CURSOR once, the cursor is now positioned below VERIFY.
- Press STORE, the LC display contains the following information:

WAITING FOR DATA INP
PLS SEND DATA

- Activate the data transmission from the personal computer to the tape recorder. The LC display shows the following information as soon as valid data are decoded:

VERIFYING DATA
PLEASE WAIT

After the data comparison has been successfully completed, the following message is displayed:

VERIFICATION SUCCES-
FULLY COMPLETED

If the data do not agree, the following message is displayed:

VERIFICAITON FAILED
PLEASE REPEAT

The following message is displayed if:

No transmission has been started within approx. 15 seconds,
and
No valid data have been detected within approx. 30 seconds:

NO DATA FOUND

- In all cases the key ^/LAST switches back to the following menu:

PARAM BACKUP RS 232
^_v VERIFY SAVE LOAD

This procedure can be repeated, if necessary, or with ^/LAST you can page back to the starting position.

4.8.6 LOADING the Data from the Personal Computer

When the LOAD command (loading data from the external storage medium) is entered on the tape recorder, the microprocessor serially receives all stored audio data and tape tension and loads them into RAM. Normally the first of the three identical data block on the external storage medium suffices for loading the data. However, if errors occur during the loading operation, the processor can access the second or the third data block.

Procedure

- Same as in 4.8.5 until the following menu is displayed:

PARAM BACKUP RS 232
^_v VERIFY SAVE LOAD

- Press >/CURSOR three times, the cursor is now positioned below LOAD.
- Press STORE, the LC display contains the following information:

WAITING FOR DATA
PLS SEND DATA

- Start the data transmission from the personal computer to the tape recorder. The LC display contains the following information as soon as valid data are detected:

DATA LOADING IN
PROGRES - PLS WAIT

Upon successful completion of the load operation the following message is displayed:

DATA LOADING
COMPLETED

If read errors have occurred (e.g. transient line voltage failure, contaminated soundheads) the following message is displayed:

DATA LOADING FAILED
DEFAULT PARAM LOADED

Repeat the process, or if desired, continue to work with the default parameters.

The following message is displayed if:

Transmission has not been started within approx. 15 seconds,
and

No valid data have been detected within approx. 30 seconds:

NO DATA FOUND

The old audio and tape tension parameters are still available in the RAM.

- In all cases the key ^/LAST switches back to the following menu:

PARAM BACKUP RS 232
^_v VERIFY SAVE LOAD

- This procedure can be repeated, if necessary, or with ^/LAST you can page back to the starting position.

4.9 Programming the Operation Parameters

4.9.1 Program Switch LINE AMPLIFIER

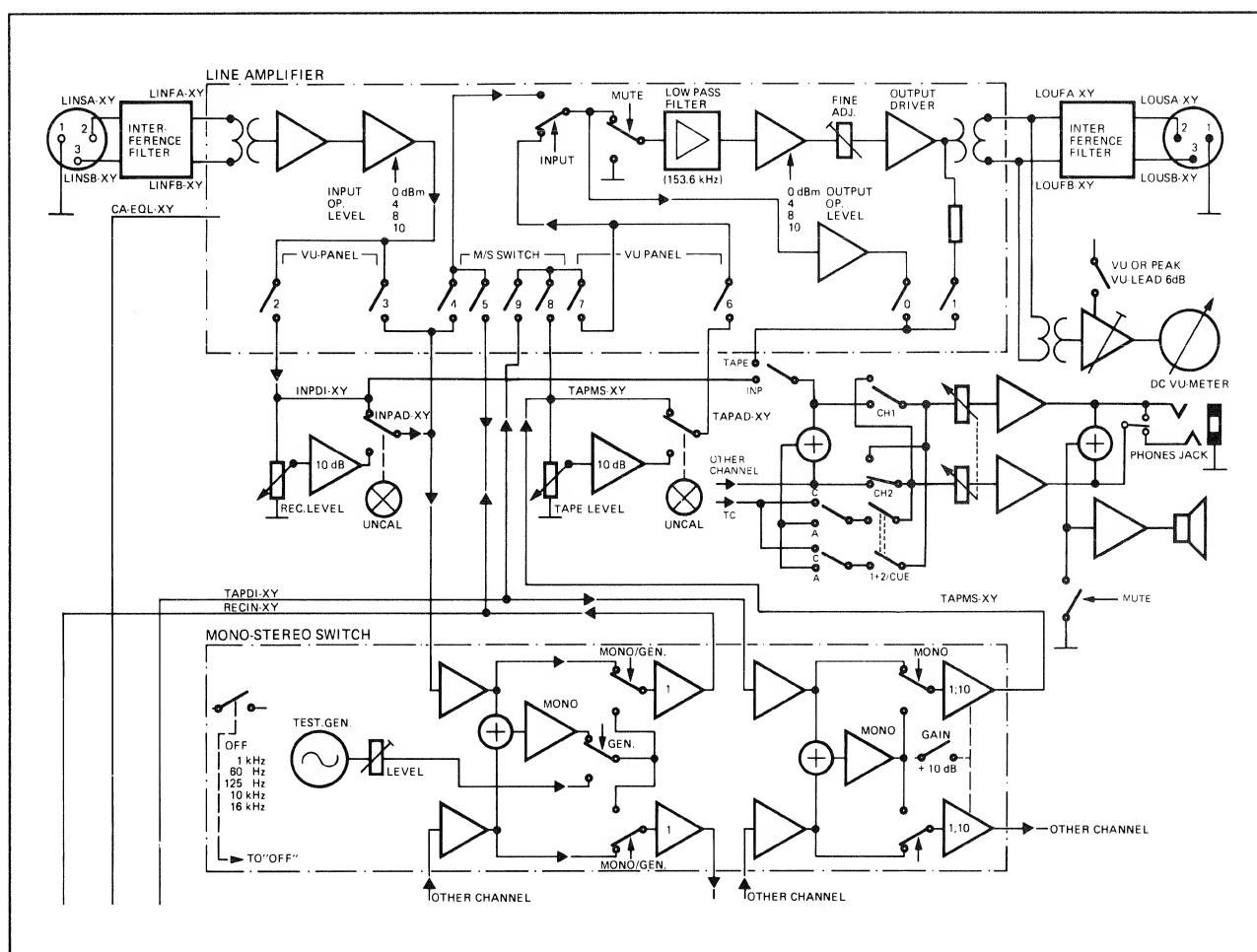


Fig. 4.9.1

JS0, JS1

Connection of internal monitor and headphones output:

Connection on
output amplifier

JS0 = 0
JS1 = 1

Connection before muting

JS0 = 1
JS1 = 0

Monitor speaker and
headphones switched off

JS0 = 0
JS1 = 0

JS2...JS9: VU-meter panel, mono/stereo switch:

Configuration	JS2	JS3	JS4	JS5	JS6	JS7	JS8	JS9
without VU-Panel, without M/S- Switch	1**	1	1	1	0	1	0	1
with VU-Panel, without M/S- Switch	1	0	1	1	1	0	1	1
without VU-Panel, with M/S- Switch	1**	1	0*	1*	0	1	1	0
with VU-Panel, with M/S- Switch	1	0	0*	1*	1	0	0	0

* The indicated switch position means that when the output selector is in the INP position, the RECIN output signal of the mono/stereo switch will be heard. If the input signal is to be tapped before the mono/stereo switch, it is necessary to set JS4 to 1 and JS5 to 0.

** On machines without VU-meter panel and without monitors speaker the jumper setting JS2 = 0 is required.

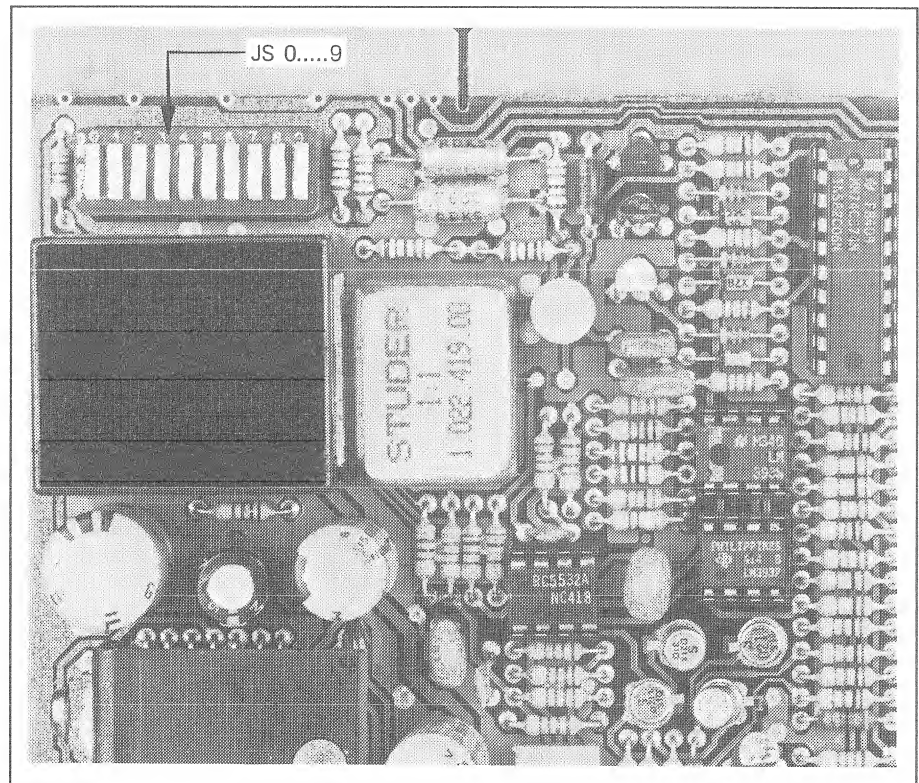


Fig. 4.9.2

4.9.2 Jumper REPRODUCE AMPLIFIER

The SYNC reproduce frequency response can be switched from 12 kHz ("N" = narrow) to 20 kHz ("W" = wide) by means of a jumper.

Note Strong cross talk from the record to the sync reproduce channel must be expected above 12 kHz!

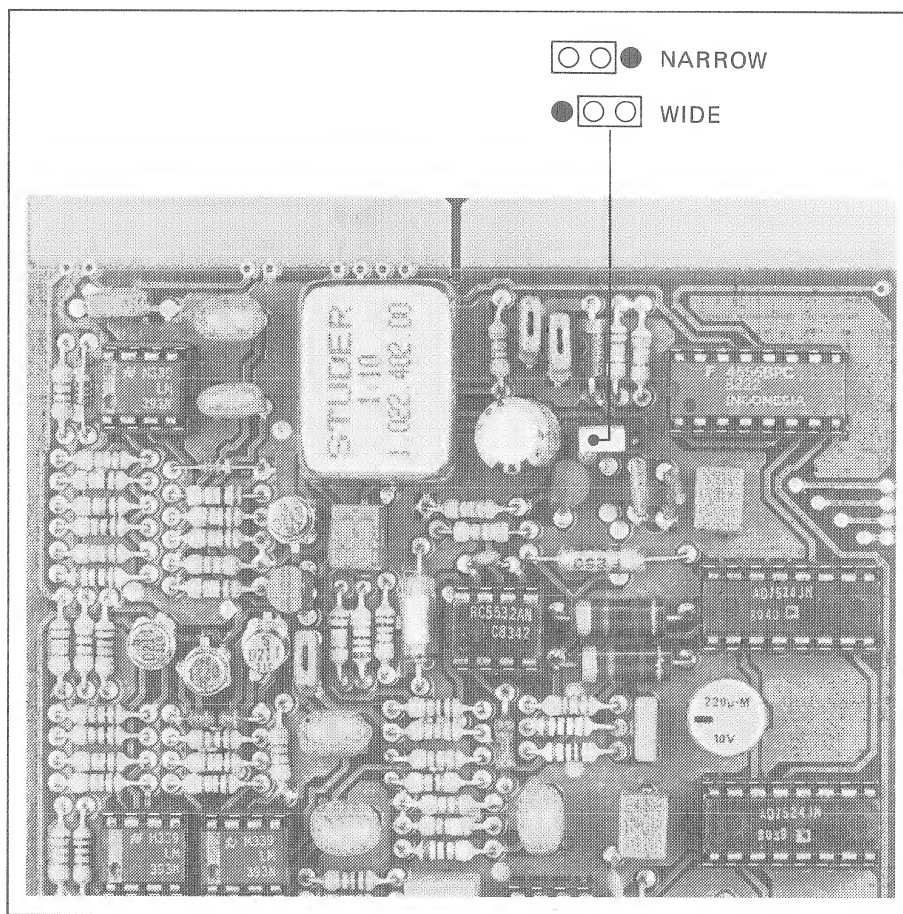


Fig. 4.9.3

4.9.3 Jumper VU-Meter Amplifier

The display characteristic of each VU-meter or peak program meter (PPM) can be selected by means of a jumper on the back of the VU-meter panel.

VU indication according to IEC recommendation 268, part 10, Section 4; peak program indication (PPM) according to IEC recommendation 268, part 10, Section 3 (except 24, 1, scale division).

- Remove the VU-meters by unfastening the 4 mounting screws.

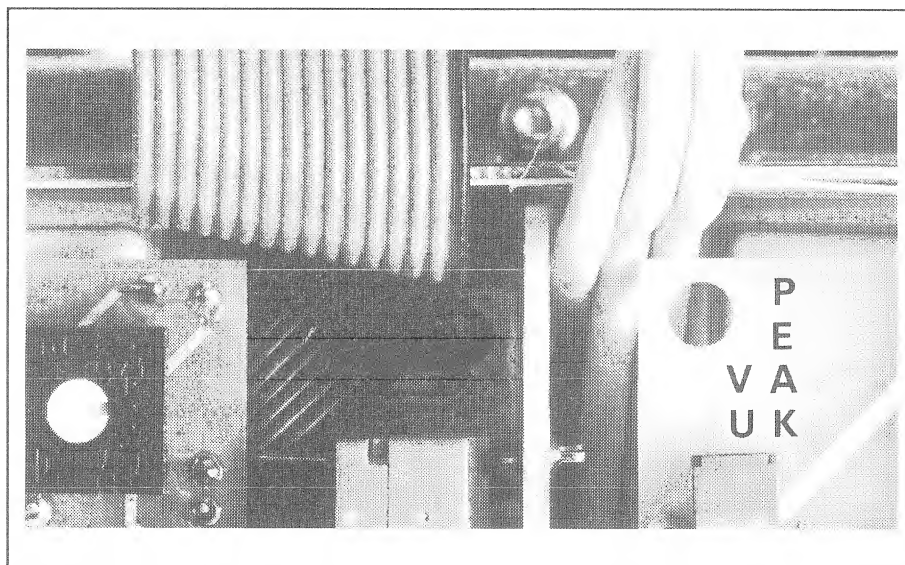


Fig. 4.9.4

4.9.4 Jumper and Potentiometer MONO/STEREO SWITCH and/or TEST GENERATOR

Jumper

- If the mono/stereo switch is retrofitted, the setting of the program switch on the LINE AMPLIFIER must be altered correspondingly (refer to 4.9.1). In addition the
- Function 031 "STEREO/MONO" is to be program assigned to a key selected by the user (as shown in example 4, Section 2.6.4)
- Key label is to be changed, and the
- Status indication plate is to be replaced by the one with the complete labeling. Identification plates and plug-in LEDs are bypacked in the accessories of the recorder.

In machines for which a test generator is desired but the mono/stereo switch is not desired or applicable (e.g. full-track versions), the electronics of the mono/stereo switch is nevertheless required.

In this case the TA-ACTMD signal must be pulled to ground with jumper IC1 (jumper in position "TEST GENERATOR ONLY"); the microprocessor then assumes that there is no mono/stereo switch so that this switch will not be operated by the software.

The record operating mode can be selected with jumper JS2:

- Mono signal either only from the input channel 1, or
- The aggregate signal of channels 1 + 2.

The reproduce operating mode can be selected with jumper JS3:

- The aggregate signal of channels 1 + 2 can either be connected only to the output channel 1 or,
- To both channels 1 and 2.

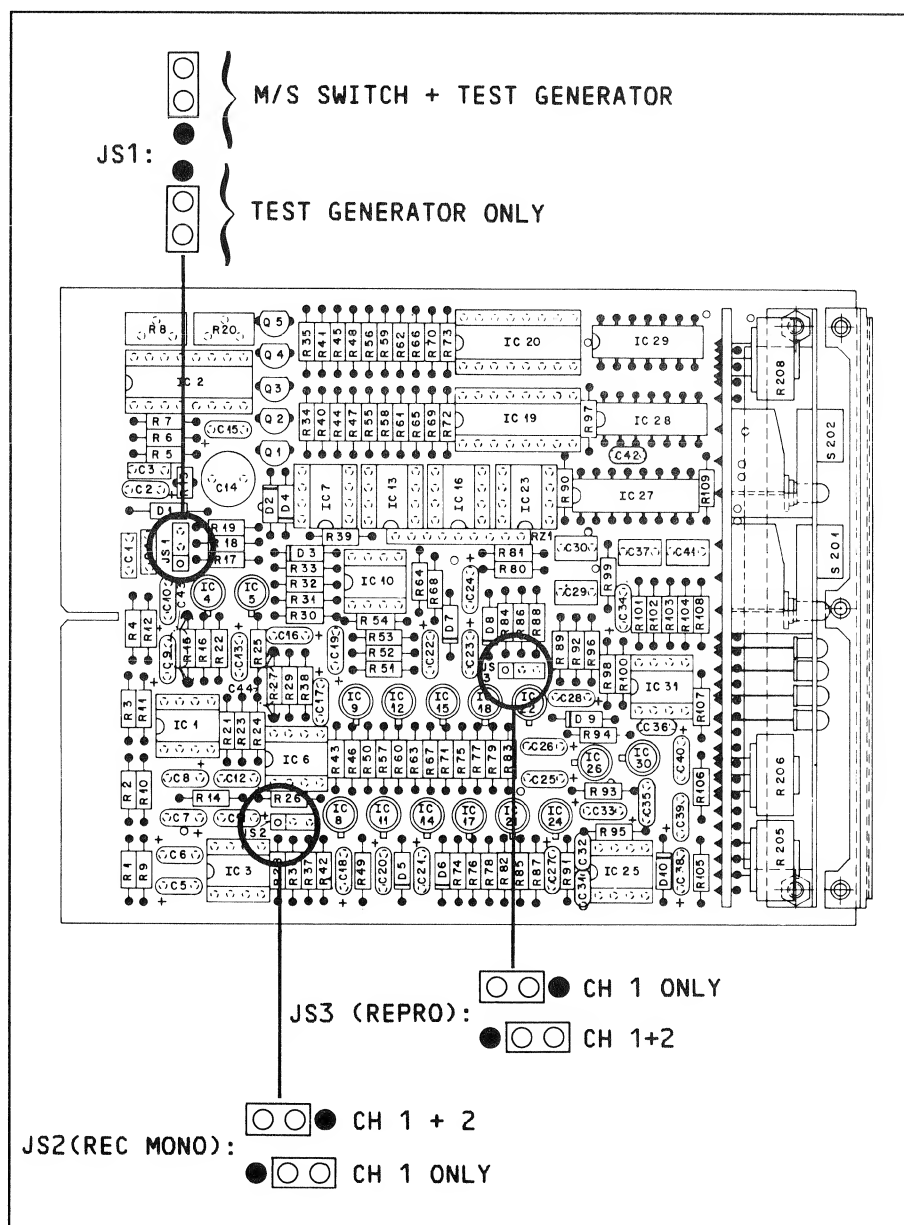


Fig. 4.9.5

Potentiometers

(Prerequisite: the tape recorder has been calibrated as specified in Section 4.2).

- LEVEL MONO alignment, reproduce:
- Mount a tape
- Select the MONO mode (simultaneously press STOP and STEREO MONO).
- Set the level for the desired flux with the "LEVEL MONO REPROD" potentiometer.

- Select a setting that is 1.1 dB below the MONO level in order to compensate the guard track loss (not taken into consideration in the factory setting!).
- LEVEL MONO alignment, record: Feed nominal level 1 kHz.
- Select MONO mode (simultaneously press STOP and STEREO-MONO).
- Set the output to nominal level by means of "LEVEL MONO RECORD" potentiometer.
- TEST GENERATOR alignment:
- Switch the recorder to INPUT.
- Press the "REF" button on MONO/STEREO SWITCH circuit board; set the "REF LEVEL" potentiometer to a reference level of 0 dB/VU.

4.9.5 Jumper TIME CODE READ/WRITE UNIT

With the jumper JS1 the LED can be programmed not to indicate whether a signal is recorded on the time code track (CODE LEVEL LED).

When the time code channel is operated without the CODE DELAY UNIT 1.820.722, the delay input and output must be interconnected. The serial interface can be used for this purpose, if available, or the jumper JS2 can be moved to the corresponding position on the CODE READ/WRITE amplifier. In the second case no CODE DELAY UNIT may be installed!

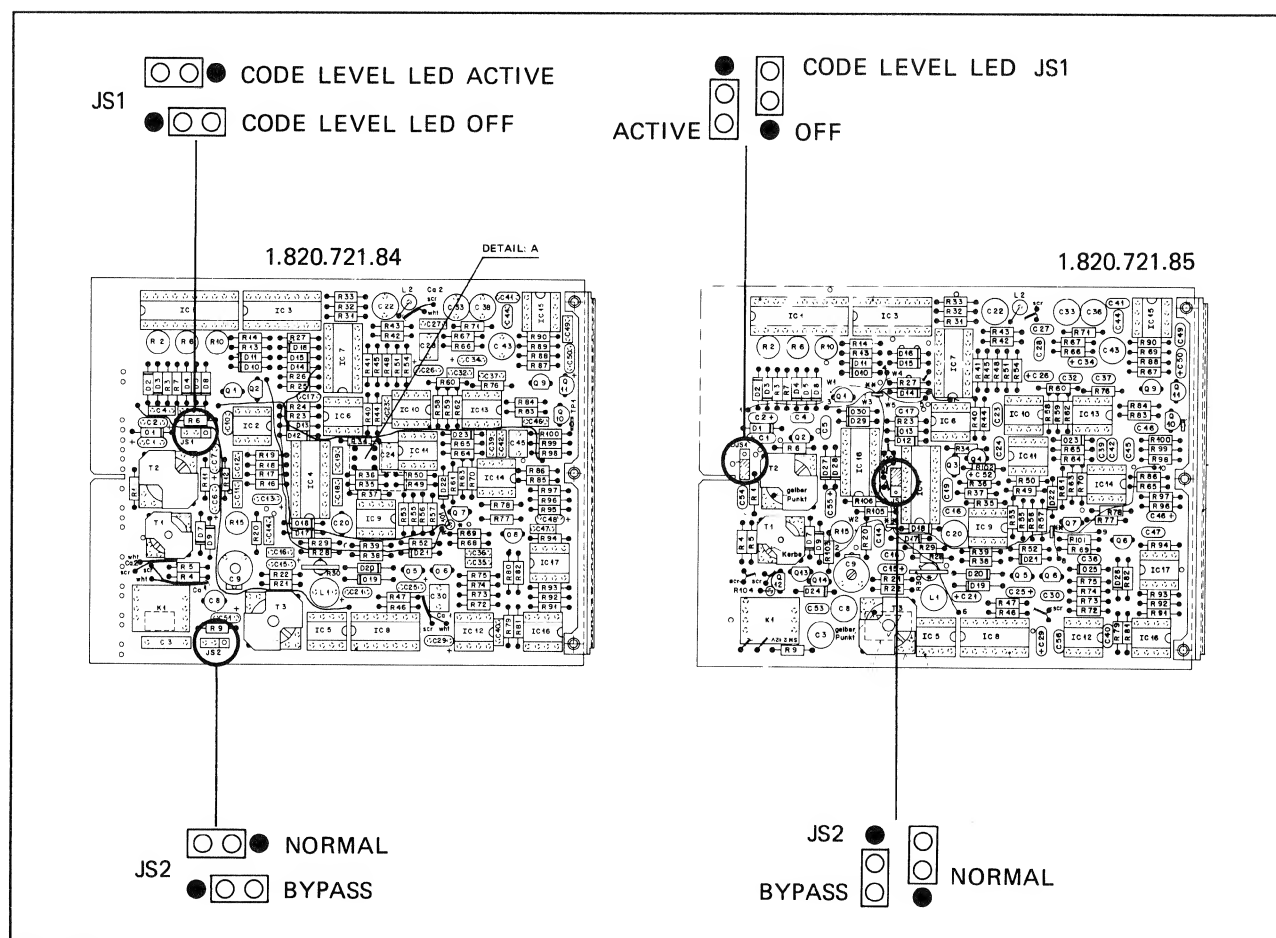


Fig. 4.9.6

4.9.6 Jumper MONITOR AMPLIFIER

- MONITOR AMPLIFIER (refer to Fig. 4.9.7):
- Jumper JS1 in position "S": both channels are connected to the headphones socket.
- Jumper JS1 in position "M": only channel 1 is connected to the headphones socket.

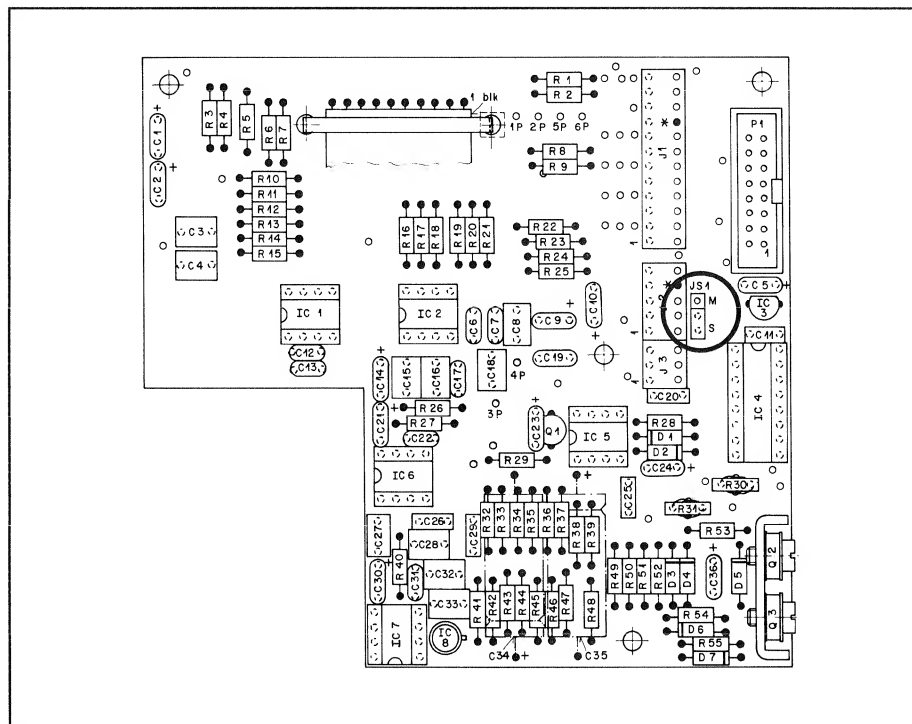


Fig. 4.9.7

- SOURCE SELECTOR BOARD (refer to Fig. 4.9.8):
Jumpers JS1 and JS2 must either be both in position "A" or "C"!
- Jumpers JS1 and JS2 in position "A":
When the switch "1+2/CUE" is pressed, the aggregate signal of both audio channels is connected to the monitor speaker or the headphones socket.
- Jumpers JS1 and JS2 in position "C":
If switch "1+2/CUE" is pressed, the time code signal is connected to the monitor speaker or to the headphones socket respectively.

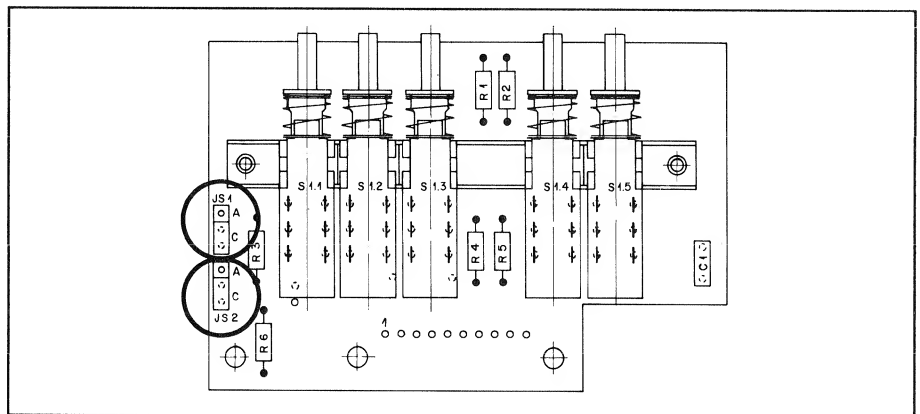


Fig. 4.9.8

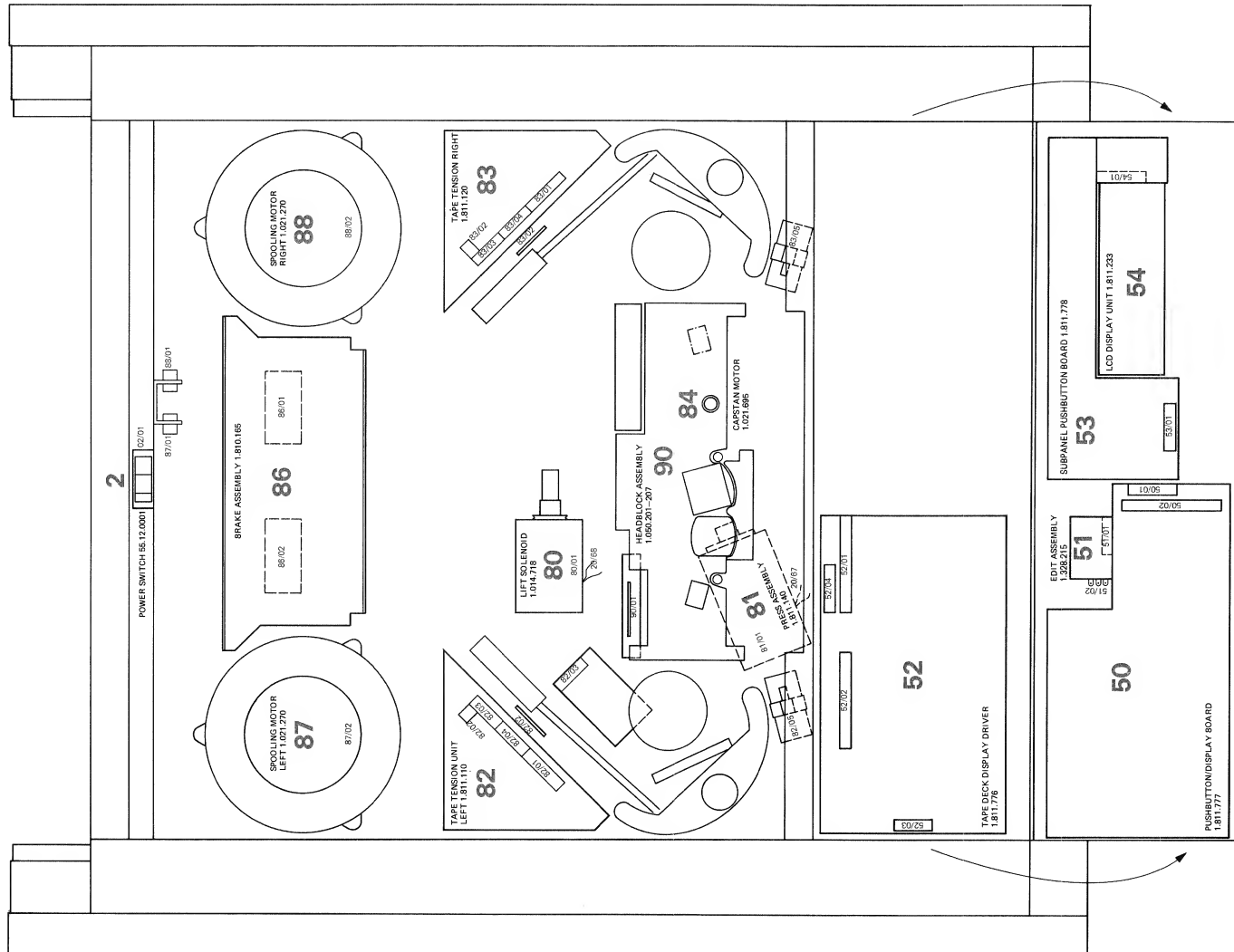
4.10 Bias Adjustment Parameters

Tape Type	U(dB)			
Tape Speed	9,5 cm/s 3,75 ips	19cm/s 7,5 ips	38cm/s 15 ips	76cm/s 30 ips
Agfa PEM 468	6	6	3.5	1.5
Agfa PEM 469	7	7	5	2
Agfa PER 525	6	5	3	1
Agfa PER 528	6	6	3.5	1.5
Ampex 406	6	5	3	1.5
Ampex 456 MASTER	5	6.5	3.5	1.5
BASF LGR 30P	6	6	4	1.5
BASF LGR 50P	6	6	4	1.5
BASF SPR 50LH/LHL	6	5.5	3.5	1.5
BASF Studio Master 910	5	6	4.5	1.5
EMI 816/817	6	6.5	4	1.5
PYRAL CJ90	6	6.5	3.5	1.5
SCOTCH (3M)206	5.5	5.5	3	1.5
SCOTCH (3M)226	6	6	3.5	1.5
SCOTCH (3M)250	5	6	3.5	1
SCOTCH (3M)256	6	6.5	3.5	1
SCOTCH (3M)263	6	6	3	1

5. Master Section

ESE = Electrostatically sensitive assembly

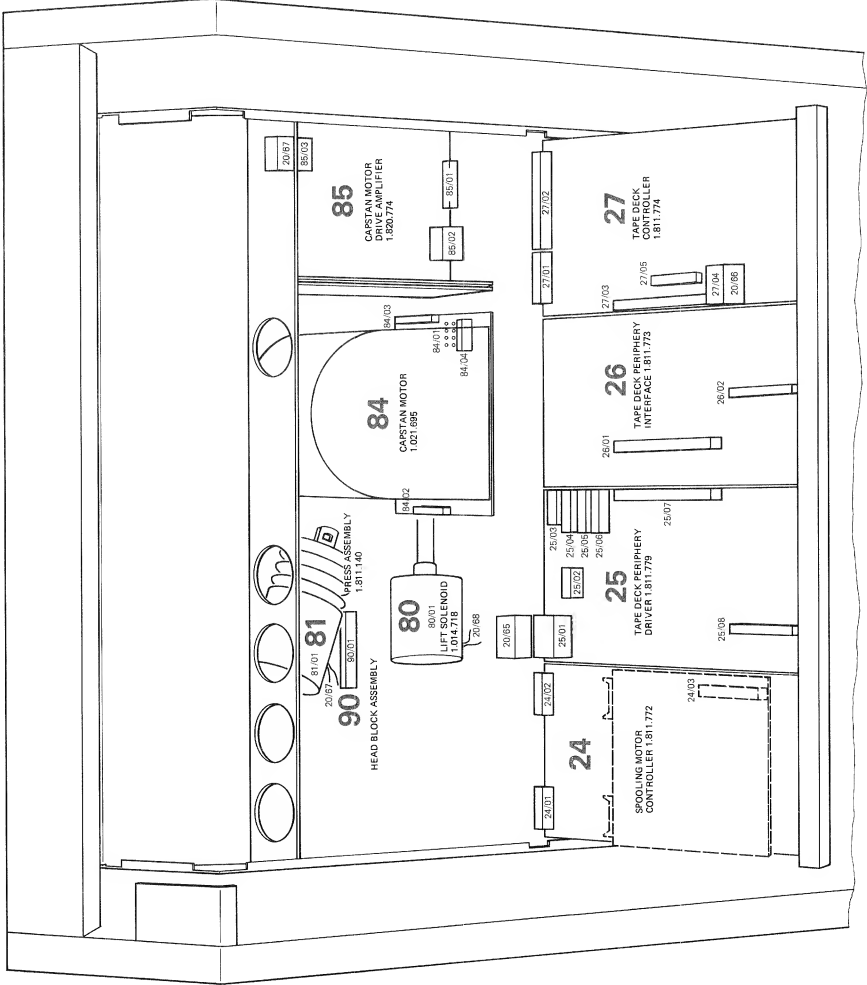
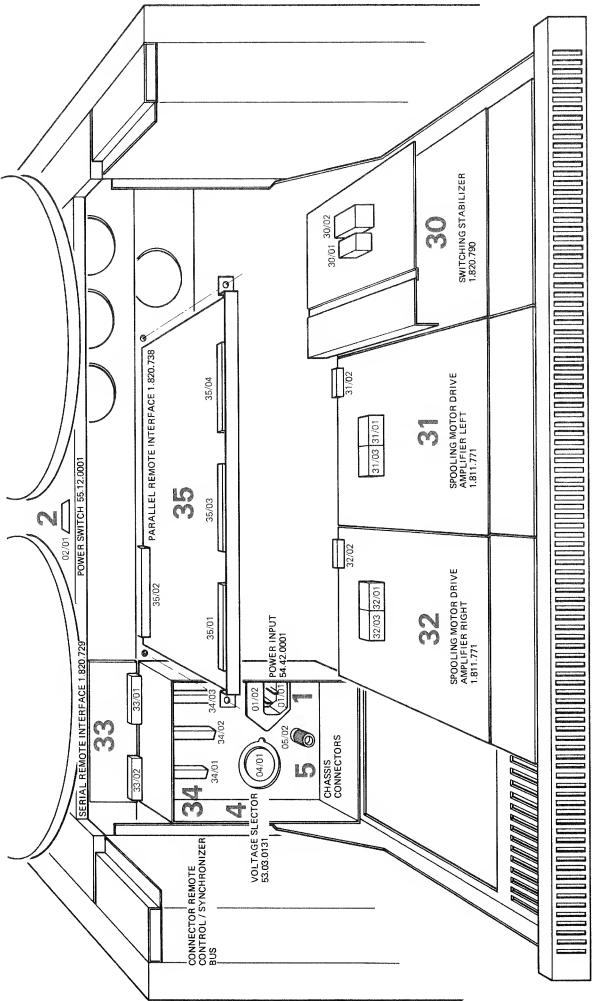
Contents			GRP/ELM	
Block diagram of the groups and elements				5/1
Wiring				5/4
Principal connection types				5/4
Cable designations, color scheme				5/5
Explanation to the LOCATION PIN LIST				5/6
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Tape transport section				5/85
Block diagram tape transport				5/86
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Block diagram MP Unit Tape Deck Control	1.820.785.00	ESE	GRP20/ELM44	5/88
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Block diagram master serial interface	1.820.753.00	ESE	GRP20/ELM43	5/91
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Master serial interface	1.820.753.81	ESE	GRP20/ELM43	5/95
Block diagram master periphery control	1.820.728.00	ESE	GRP20/ELM46	5/97
Block diagram channel control				5/98
Block diagram C-MOS bus (audio)				5/99
Master periphery controller	1.820.728.81	ESE	GRP20/ELM46	5/101
Block diagram serial remote controller	1.810.751.00	ESE	GRP20/ELM45	5/103
Block diagram SMPTE/EBU interface	1.820.751.00	ESE	GRP20/ELM45	5/104
Serial remote controller	1.810.751.82	ESE	GRP20/ELM45	5/105
SMPTE/EBU bus interface	1.820.751.21	ESE	GRP20/ELM45	5/107
Block diagram parallel remote interface	1.820.738.00	ESE	GRP35	5/109
Parallel remote interface	1.820.738.00	ESE	GRP35	5/111
Parallel remote interface	1.820.738.81	ESE	GRP35	5/113
Block diagram serial remote interface	1.820.729.00	ESE	GRP33	5/115
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Block diagram informations GRP50-54				5/119
Block diagram display driver board				5/120
Tape deck display driver	1.811.776.00	ESE	GRP52	5/121
Tape deck display driver	1.811.776.82	ESE	GRP52	5/123
Push button board/display board	1.811.777.00		GRP50	5/125
Subpanel push button board	1.811.778.00		GRP53	5/127
Shuttle board	1.328.214.00		GRP51	5/129
LC display unit	1.811.233.81		GRP54	5/131
LC display unit	1.811.233.82		GRP54	5/132
TC channel control board	1.820.732.00			5/133
TC channel control board	1.820.735.00			5/135



SURVEY OF GROUPS (PART2, REAR-VIEW)

GRP GRP/ELM DESIGNATION OF ASSEMBLIES

SURVEY OF GROUPS (PART3, TAPE DECK SECTION)



5.1 Wiring

For equipment with complex electronics, wiring diagrams are difficult to follow and can cause misinterpretations. For this reason we have chosen a more reliable method based on automatically generated computer wiring lists. These provide comprehensive information on all electrical connections within the equipment.

For the sake of clarity, the power supply, the tape transport control system, and the audio section have been subdivided into groups (GRP) which in turn comprise elements (ELM) and connecting points (PNT).

The signal names are constructed from various abbreviations which identify their function.

5.1.1 Groups

The electrical part of the A812 tape recorder has been subdivided into groups (GRP01...GRP90). These Groups are linked by cables and connectors that are identified by the corresponding group number. The group summary (foldout page on the left) and the block diagram (at the beginning of the diagram Section) identify the group allocation and the principal connections.

5.1.2 Elements, points

Groups that comprise several plug-in circuit boards or other assemblies are subdivided into elements (ELM). The elements contain the connecting points (PNT).

5.1.3 Principal connection types

Type	Designation	STUDER No.
A	Connector type D, crimp:	
AA	Contact pin, for thin stranded wires	54.02.0451
B	Contact pin, for thick stranded wires	54.02.0455
BB	Contact sleeve, for thin stranded wires	54.02.0450
	Contact sleeve, for thick stranded wires	(54.02.0454)
C	CIS connector:	
D	Contact sleeve	54.01.0402
	Contact pin 54.01.0401	
F	MOLEX connector:	
	Contact sleeve, for thin stranded wires or contact sleeve for solder mounting on circuit board	54.02.0412
FF	contact sleeve, for thick stranded wires	54.02.0407
		54.02.0413
G	Soldering pin	29.21.6002
H	Stranded/solid wire, tinned (6 mm)	--,--,----
I	Connector, type D, crimp, contact pin	54.02.1112
JM	Blade terminal AMP FASTON, crimp	
J	0.8 x 6.3 mm:	
JJ	Connector sleeve, for thin stranded wires	54.02.0337
	Connector sleeve, for thick stranded wires	54.02.0332
	Connector sleeve, for very thick stranded wires	54.02.0338
K	Stranded/solid wire, skinned (8), tinned (1 mm)	--,--,----
L	Stranded/solid wire, tinned (4 mm)	--,--,----
M	MOLEX contact pin, for thin stranded wires	54.02.0411
	or MOLEX contact pin for solder mounting on circuit board	54.02.0406
MM	MOLEX contact pin, for thick stranded wires	54.02.0410
MY	AMP blade terminal (blade)	54.02.0344
N	CIS connector, contact pin	54.01.0225
O	Contact spring, for EU card edge connector	54.01.0376
P	Female multipoint connector:	
PP	Contact spring, for thin stranded wires	54.06.4512
	Contact spring, for thick stranded wires	54.06.4510
Q	Socket terminal strip, contact sleeve	54.01.0451
R	Connector, type D, crimp, contact sleeve	54.02.1111

S	Stranded/solid wire, skinned (4 mm) and tinned	--,--,---
T	TERMI-POINT plug contact on WIRE WRAP pin	--,--,---
U UU	Detent spring solder contact, crimp Detent spring solder contact, crimp	54.03.0201 54.34.6002
V VV	Connector sleeve for thick stranded wires Connector sleeve for thin stranded wires	54.02.0432 54.02.0474
W	Wrapped	--,--,---
X XX	Blade connector AMP FASTON, crimp 0.5 x 2.8 mm: Connector sleeve, for thin stranded wires Connector sleeve, for thick stranded wires	54.02.0325 54.02.0329
Y YY	Blade connector AMP FASTON, crimp 0.8 x 2.8 mm: Connector sleeve, for thin stranded wires Connector sleeve, for thick stranded wires	54.02.0326 54.02.0327
Z	Not tinned	--,--,---

Fig. 5.1

5.1.4 Cable designations, conductor color scheme

The most important connecting lines of the cabling are labelled. The conductor ends are marked with three numbers which identify the group, the element, and the corresponding connection point.

Flat-cable connectors have labels that specify the:

- Group and element numbers where the connector itself is plugged in, and either the
- Name of the module into which the opposite end of the cable is plugged in,

or:

- the Name of the module into which the connector itself is plugged in.

Examples: Labelling of individual conductors in connectors:

The tape deck controller PCB 1.811.774.XX (GRP 27) features a 12-pin Molex socket (ELM 4) which is identified on the component arrangement diagram with P1. One of the 8 connecting wires on the matching connector (GRP 20, ELM 4) is green and is labelled as 20-66-6. This combination of numbers identifies a connection point (PNT) of a specific ELEMENT (ELM) of a group (GRP), in this example GRP 20, ELM 66, connection point 6. In other words: the green wire is the connection 6 of the 12-pin Molex socket P1.

The opposite end of the green conductor is imprinted with the designation 20-20-3, i.e. it is connected to terminal 3 of the wire field ELM 20 on the BASIS BOARD GRP 20.

■ Labelling of flat cables:

Both cable ends are fitted with labels that identify the GROUP and the ELEMENT of the corresponding connection socket.

Cables that originate from a distributor are usually identified with TO and the name of the corresponding assembly, for example:

The flat cable connector P3 (ELM 3, on the BASIS BOARD (GRP 20) is labelled as follows:

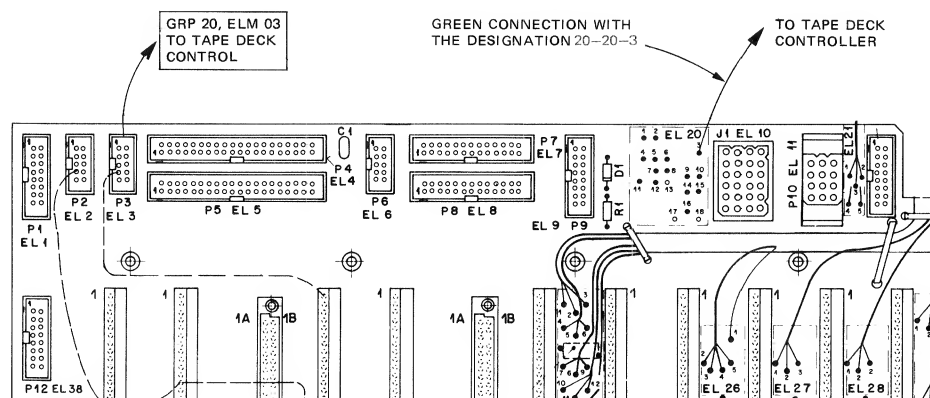
GRP20 ELM03
TO TAPE DECK
CONTROL

i.e. this flat cable connects the BASIS BOARD 1.811.700.XX to the TAPE DECK CONTROLLER 1.811.774.XX (GRP 27).

The label on the TAPE DECK CONTROLLER end of the flat cable is labelled as follows:

GRP27 ELM01
TAPE DECK
CONTROLLER

Basis Board 1.811.700.XX (GRP 20)



Color scheme:

0	black	(blk)
1	brown	(brn)
2	red	
3	orange	(org)
4	yellow	(yel)
5	green	(grn)
6	blue	(blu)
7	violet	(vio)
8	grey	(gry)
9	white	(wht)
-	uncolored	(unc)

Fig. 5.3

5.1.5 Explanations to the LOCATION PIN LIST

The LOCATION PIN LIST provides information on all connecting points and their signal names as well as the type of connection and, if applicable, also the color of the connecting wire.

This list is arranged by groups and contains all connecting points of a group, sorted by element number. However, it does not provide any information on the connections of an individual point. But it may contain information on the cable harness routing (see example below).

To trace the cable connection of a known signal name (on a certain group and the corresponding element), the SIGNAL WIRE LIST must be used.

This SIGNAL WIRE LIST must also be used if only the signal name is known (Section 5.1.6).

If the GROUP (e.g. a circuit board) and the corresponding ELEMENT (e.g. a connector on this PCB) are known, all available signals and their names, the color and connection type of the conductor wires, as well as the pin location on the connector can be determined from the LOCATION

Example: LOCATION PIN LIST PAGE 29

* MILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 29 *

* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

GRP 27 1.811.774.00
<-- <-- <-- CONTINUATION
=====

ELM 4
SUPPLY (FROM GRP 20, ELM 20) J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+15.0			M	
2	+0.0			M	
3	-15.0			M	
4	+5.6			M	
5	+3.0			M	
6	T-PWRON			M	
7					
8	+0.0			M	
9	T-SUPVON			M	
10					
11	+0.0			M	
12					

- Group 27 is the TAPE DECK CONTROLLER 1.811.774.00
- ELEMENT 4 of GROUP 27 is the 12-pin connector P1 for GROUP 20, ELEMENT 20.
- CONNECTION POINT 1 of ELEMENT 4 of the GROUP 27 carries the signal name +15V (i.e. the +15 V supply).
- The connection type is M.

As can be seen from Table 5.1 in Section 5.1.3, code M is a MOLEX contact pin for PCB mounting (54.02.0406). See below.



- No wire color is specified because this connector is solder mounted directly to the tape deck controller board.
- Neither are any colors specified if the connection cable is a flat cable.

As the above example demonstrates, the LOCATION PIN LIST can also supply information on the origin of the cable to the connector (or in our example: to the socket).

ELEMENT 4 GROUP 27 is labelled as SUPPLY (FROM GRP 20, ELM 20).

The origin of the connection to the 12-pin Molex socket (GRP 20, ELM 20) can be found on page 15 of the LOCATION PIN LIST.

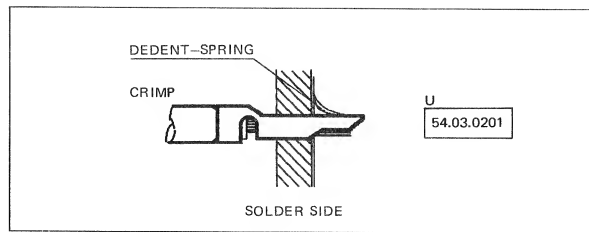
 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 15 *
 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 20 1.811.898.00
 WIRE FIELD, TO CONN. GRP20, ELM65/66

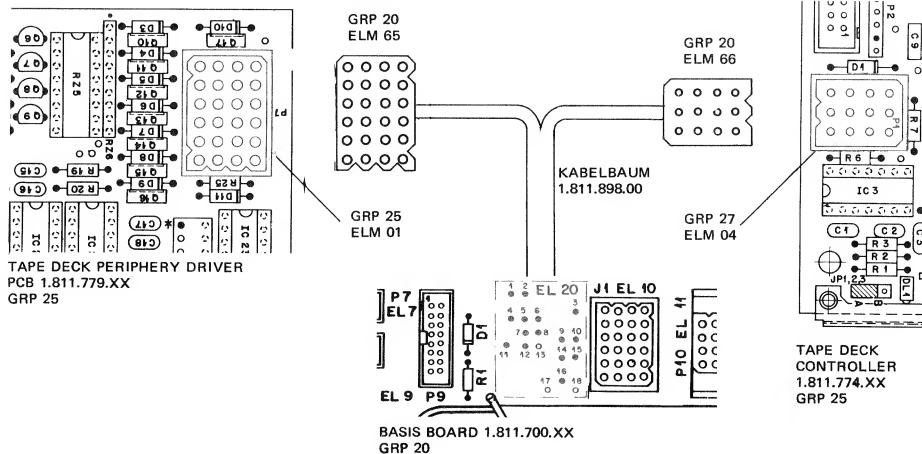
PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+5.6	3	U		
2	+5.6	3	U		
3	T-PWRON	>	U		
4	+3.0	0	U		
5	+3.0	0	U		
6	+3.0	0	U		
7	+3.0	0	U		
8	+3.0	0	U		
9	-15.0	6	U		
10	-15.0	6	U		
11	T-SUPVON	9	U		
12	+3.0	0	U		
13	+3.0	0	U		
14	+15.0	2	U		
15	+15.0	2	U		
16	+24.0	7	U		
17	-24.0				
18	+24.0				

- Group 20 is the BASIS BOARD 1.811.700.XX
- ELM 20 of GRP 20 is the WIRE FIELD (connection field) TO CONN. GRP 20 ELM 65/66 (to connector GRP 20, ELM 65 and ELM 66). The part number for the connection cable is 1.811.898.00.
- The signal on connection point 3 (GRP 20, ELM 20, PNT 3) is named T-PWRON.
- The connection wire is green (color 5 = green), see Table 5.3.
- The connection type is U = detent spring solder contact, crimp (54.03.0201)



This information already gives precise information on the arrangement of the cable connection.

Representation on diagram:



5.1.6 Explanations to the SIGNAL WIRE LIST

This list is arranged alphabetically by signal name. The alphabetic section is preceded by the signal names of the zero Volt points as well as the supply voltages. If the signal name is known, additional information can be extracted from this list. If only the group designation or the group number is known, the LOCATION PIN LIST (see 5.1.5) should be used.

The signal name can be found in the first column (SIGNAL NAME). The second column specifies the conductor COLOR. The fourth column specifies the groups (GRP), elements (ELM), and connecting points at which the corresponding signal appears. This column is arranged by assembly number and does not provide any information on the signal path through the equipment.

Examples:

The signal T-PWRON can be found by means of an alphabetic search on page 91 of the SIGNAL WIRE LIST

T-PWRON	5	19	1	7	F	FROM GRP30, ELM02	J01	
	5	19	2	7	M	TO GRP20, ELM10	P01	
		20	10	7	F	FROM STABILIZER GRP30, ELM02	J01	
		20	11	6	F	SYNCHRONIZER (SUPPLY)	P10	
	5	20	20	3	U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
		20	44	14		MP-UNIT MASTER	J08	1.811.786.00

Continuation of T-PWRON on page 92 of the SIGNAL WIRE LIST.

* WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 92 *													
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *													

SIGNAL NAME		COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF		5			20	66	6			F	CONNECTOR TO GRP27, ELM04	P16	
T-PWRON					27	4	6			M	SUPPLY (FROM GRP20, ELM20)	J04	
					30	2	7			M	OUTPUT (TO GRP20, ELM10)	P01	

Information from the SIGNAL WIRE LIST

Signal name (SIGNAL NAME)	: T-PWRON
Color of the conducting wires (COLOR)	: 5 = green, or none in the case of a flat cable or PCB conductor.

Connection types

(TYPE) F, M, or U

- F = Molex contact socket for this stranded wires or Molex contact socket for direct solder mounting to the circuit board.
- M = Molex contact pin for thin stranded wires or Molex contact pin for direct solder mounting to the circuit board.
- U = Detent spring solder contact, crimp

List extract relating to the signal path T-PWRON

GRP	ELM	PNT	Signal path
30	2	7	From the 24-pin Molex PCB coupling P1 pin 7 on the stabilizer board 1.820.790.XX a
19	1	7	Cable harness with Molex connector routes the green conductor from Pin 7
19	2	7	to Pin 7 of the Molex connector at the opposite end of the cable harness.
*20	10	7	This connector is plugged into the Molex socket J1 of the Basis Board 1.811.700.XX.
			From here the signal branches off via printed conductors. This signal is taken to
20	11	6	Pin 6 of the synchronizer board socket and ends here (the pin is not assigned).
20	44	14	The signal is also taken via a printed conductor to Pin 14 of the Master MPU 1.811.786.XX (multipin connector J8) and also to
20	20	3	pin 3 of the wiring field ELEMENT 20.
20	66	6	The green wire of the soldered Cable harness with Molex connector (1.811.898.XX) is taken to the
27	04	6	Tape deck controller 1.811.774.XX.

* From there the signal branches off. This is the reason why the GRP number appears more than twice in the SIGNAL WIRE LIST.

5.1.7 Signal name

The signal name is generally an abbreviation for the function or task of the corresponding signal. From the table below, arranged in alphabetic order, the following information can be retrieved:

- Explanation of the signal name
- Specification of the level for static signals (5 V or 15 V level)
- Signal status

Example: (Extract from the signal name list)

T-POS1 0 Position sensor 1
T-POS2 0 Position sensor 2
T-PWRON 0 Power on (AC detection) 1 @ on
T-READSL 0 Select read mode, MUX bus
T-REFEXT 0 Capstan PLL, external reference (vari-speed)

5/18

EDITION: 1. Oktober 1989

T	means:	TTL level (i.e. 5 V logic) (see next page)
PWRON	means:	AC power on (= mains voltage available)
1 @ on	means:	This signal is high (1) when the AC supply voltage is available.

- If this signal is +5 V this means that AC supply voltage is available.
If this signal is 0V(Low), no AC supply voltage is available or a power failure is detected.

Signal Names

A810 / A812 / A820 - SIGNAL LIST

89/06/10

SEITE 1

T = TTL, C = CMOS

+ 0.0
+0.0SENS
0.0 VCU
+ 5.0
+ 5V
+ 5.6
+ 5V-LED
+15.0
-15.0
+24.0
+26.0
-26.0
+110.0

```

+CAPMOT  0 Capstan supply voltage
+FLSUP1  0 Floating supply for FET driver, motor left
+FLSUP2  0 Floating supply for FET driver, motor left
+FLSUP3  0 Floating supply for FET driver, motor right
+FLSUP4  0 Floating supply for FET driver, motor right
+PSVTMOT 0 Positive power supply voltage for torque motors
+PWMMV   0 PWM signal mains unit motor supply
+PWMNL   0 PWM signal for motor left, negativ
+PWMNR   0 PWM signal for motor right, negativ
+PWMLPL  0 PWM signal for motor left, positiv
+PWMPR   0 PWM signal for motor right, positiv
+REMSUP  0 Remote supply voltage (+24 VDC)
+STAB+15 0 Positive input for +15.0 stabilizer
+STAB-15 0 Positive input for -15.0 stabilizer
+STABIN   0
+STABSNS  0
+STAB5.6 0 Positive input for + 5.6 stabilizer
+UCOMP    0 Low level spooling motor supply voltage
+VMOTLFT  0 Positive voltage torque motor left
+VMOTRHT  0 Positive voltage torque motor right
+YSUP     0 Motor supply voltage positiv
+10VREF   0 Analog reference tension

-FLSUP1  0 Floating supply for FET driver, motor left
-FLSUP2  0 Floating supply for FET driver, motor left
-FLSUP3  0 Floating supply for FET driver, motor right
-FLSUP4  0 Floating supply for FET driver, motor right
-PSVTMOT 0 Negative power supply voltage for torque motors
-PWMMV   0 PWM signal mains unit motor supply
-PWMNL   0 Return motor left, negativ
-PWMNR   0 Return motor right, negativ
-PWMLPL  0 Return motor left, positiv
-PWMPR   0 Return motor right, positiv
-STAB+15 0 Negative input for +15.0 stabilizer
-STAB-15 0 Negative input for -15.0 stabilizer
-STABIN   0
-STABSNS  0
-STAB5.6 0 Negative input for + 5.6 stabilizer
-UCOMP    0 Low level spooling motor supply voltage
-VMOTLFT  0 Negative voltage torque motor left
-VMOTRHT  0 Negative voltage torque motor right
-YSUP     0 Motor supply voltage negativ
-10VREF   0 Analog reference tension

A-PNOISE 0 SR calibration signal (pink noise)
ACA       0 Alternativ supply voltage (AC), pole A
ACA-130   0
ACAF      0 AC supply voltage after fuse
ACB       0 Alternativ supply voltage (AC), pole B
ACB-130   0
ACC       0 Alternativ supply voltage (AC), pole C (C=medium)
ACM       0 Motor AC voltage
ACPWE-A1  0
ACPWE-A2  0
ACPWE-A3  0
ACPWE-A4  0
ACPWE-A5  0
ACPWE-A6  0

```


A810 / A812 / A820 - SIGNAL LIST

89/06/10

SEITE 3

ACPWE-B1 0
 ACPWE-B2 0
 ACPWE-B3 0
 ACPWE-B4 0
 ACPWE-B5 0
 ACPWE-B6 0
 ACPWE-C1 0
 ACPWE-C2 0
 ACPWE-C3 0
 ACPWE-C4 0
 ACPWE-C5 0
 ACPWE-C6 0
 ACPWE-D1 0
 ACPWE-D3 0
 ACPWM-A1 0
 ACPWM-A2 0
 ACPWM-A3 0
 ACPWM-A4 0
 ACPWM-A5 0
 ACPWM-A6 0
 ACPWM-B1 0
 ACPWM-B2 0
 ACPWM-B3 0
 ACPWM-B4 0
 ACPWM-B5 0
 ACPWM-B6 0
 ACPWM-C1 0
 ACPWM-C2 0
 ACPWM-C3 0
 ACPWM-C4 0
 ACPWM-C5 0
 ACPWM-C6 0
 ACPWM-D1 0
 ACPWM-D2 0
 ACPWM-D3 0
 AFCSW-XY 0 Audio frequency current switch, 1 @ record current on
 AN-CSPDC 0 Capstan speed control 10 V @ maximal speed
 AN-ICL 0 Motor current left signal
 AN-ICLD 0 Motor current left direct
 AN-ICR 0 Motor current right signal
 AN-ICRD 0 Motor current right direct
 AN-IRL 0 Reference for motor current left
 AN-IRR 0 Reference for motor current right
 AN-POT 0 DC Varispeed control
 AN-R 0 Spooling motor phase R
 AN-RES1 0
 AN-RES2 0
 AN-RES3 0
 AN-RES4 0
 AN-RFTTL 0 Reference tape tension, left (analog)
 AN-RFTTR 0 Reference tape tension, right (analog)
 AN-S 0 Spooling motor phase S
 AN-T 0 Spooling motor phase T
 AN-TACHO 0 Tacho sensor capstan motor
 AN-TTL 0 Tape tension, left (analog)
 AN-TTR 0 Tape tension, right (analog)
 ANM-SH1 0 Shuttle signal 1 (0 v ADC)
 ANM-SH2 0 Shuttle signal 2 (cursor)
 ANM-SH3 0 Shuttle signal 3 (+ 5 V ADC)

B-BDY-XY	0	Control of Dolby NRS,	0 @ processor on input
B-CCIR	0	LED on master panel	
B-CH1	0	LED on key board for audio alignment,	0 @ on
B-CH2	0	LED on key board for audio alignment,	0 @ on
B-FAD	0	LED on command unit	
B-FAST	0	LED on master panel	
B-FORW	0	LED on command unit	
B-INP-XY	0	LED on channel control	
B-LED0	0	LED on key board for audio alignment,	0 @ on
B-LED1	0	LED on key board for audio alignment,	0 @ on
B-LED2	0	LED on key board for audio alignment,	0 @ on
B-LED3	0	LED on key board for audio alignment,	0 @ on
B-LOC1	0	LED on command unit	
B-MONO	0	LED on master panel,	0 @ on
B-NAB	0	LED on master panel,	0 @ on
B-PLAY	0	LED on command unit,	0 @ on
B-REA-XY	0	LED on channel control,	0 @ on
B-REC	0	LED on command unit,	0 @ on
B-REC-XY	0	LED on channel control,	0 @ on
B-REP-XY	0	LED on channel control,	0 @ on
B-REW	0	LED on command unit,	0 @ on
B-SAF-XY	0	LED on channel control,	0 @ on
B-SLOW	0	LED on master panel,	0 @ on
B-STEREO	0	LED on master panel,	0 @ on
B-STOP	0	LED on command unit,	0 @ on
B-STORE	0	LED on key board for audio alignment,	0 @ on
B-SYN-XY	0	LED on channel control,	0 @ on
B-TLC-XY	0	Control of Telcom NRS,	1 @ Processor on input
B-TRANSF	0	LED on command unit	
B-XKEY	0	LED on command unit	
B-YKEY	0	LED on command unit	
B-ZKEY	0	LED on command unit	
BIAFB-XY	0	Feedback signal for bias setting	
BIASA-XY	0	Bias driver, HF-switch	
BIASB-XY	0	Supply voltage for bias driver	
BIASC-XY	0	Bias driver, HF-switch	
BM-0.2	0		
BM-0.3	0		
BM-0.4	0		
BM-0.5	0		
BM-0.6	0		
BM-0.7	0		
BR-FADRY	0	Status FADER START READY	0 @ LED or Lamp on
BR-FORW	0	Status FORWARD,	0 @ LED or Lamp on
BR-LOCST	0	Status LOC START,	0 @ LED or Lamp on
BR-PLAY	0	Status PLAY,	0 @ LED or Lamp on
BR-REC	0	Status RECORD,	0 @ LED or Lamp on
BR-REHSL	0	Status REHEARSAL	0 @ LED or Lamp on
BR-REW	0	Status REWIND,	0 @ LED or Lamp on
BR-STOP	0	Status STOP,	0 @ LED or Lamp on
BR-VRSPD	0	Status VARI SPEED,	0 @ LED or Lamp on
BRC-BIA	0	LED on key board for audio alignment (rec. bias)	0 @ on
BRC-LVL	0	LED on key board for audio alignment (rec. level)	0 @ on
BRC-TRB	0	LED on key board for audio alignment (rec. treble)	0 @ on
BRP-BAS	0	LED on key board for audio alignment (repr. bass)	0 @ on
BRP-LVL	0	LED on key board for audio alignment (repr. level)	0 @ on
BRP-TRB	0	LED on key board for audio alignment (repr. treble)	0 @ on

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SEITE 5

CA-ADR-R 0 CMOS bus (LSB address)
 CA-ADR-S 0 CMOS bus
 CA-ADR-T 0 CMOS bus
 CA-ADR-U 0 CMOS bus (MSB address)
 CA-BADXY 0 Electronics 1.820.712/713 bias adjustment enable, 0 @ write
 CA-BADXY 1 Electronics 1.820.811/812/813: reference voltage for bias
 CA-BADXY 2 and erase current, offset voltage of bias loop = 5.3V
 CA-BATXY 0
 CA-BIAXY 0 Bias soft switching, 1 @ bias soft switch on
 CA-BIKXY 0 Bias switching, 1 @ bias switches on
 CA-BPDTX 0 By pass delay time code, 1 @ by pass
 CA-CHSTC 0 Time-code
 CA-CHSXY 0 Channel select, CMOS bus 0 @ select on for write
 CA-CMTST 0 CM-Bus Bit Test
 CA-DATA0 0 Data line, CMOS bus
 CA-DATA1 0 Data line, CMOS bus
 CA-DATA2 0 Data line, CMOS bus
 CA-DATA3 0 Data line, CMOS bus
 CA-DATA4 0 Data line, CMOS bus
 CA-DATA5 0 Data line, CMOS bus
 CA-DATA6 0 Data line, CMOS bus
 CA-DATA7 0 Data line, CMOS bus
 CA-EQLXY 0 Switching equalization, low frequency,
 CA-EQLXY 1 0 @ 3180 us on (=NAB) 1 @ CCIR
 CA-EQRXY 0 Equalization record adjustment enable, 0 @ write
 CA-EQTXY 0
 CA-ERAXY 0 Erase soft switching, 1 @ erase soft switch on
 CA-ERKXY 0 Erase switching, 1 @ erase switch on
 CA-ER1XY 0 Erase voltage
 CA-ER2XY 0 Erase voltage
 CA-ER3XY 0 Erase voltage
 CA-ER4XY 0 Erase voltage
 CA-INPXY 0 Input signal on output, 0 @ input on
 CA-INSTR 0 Switching VU or PPM 0 @ Peak, 1 @ VU
 CA-LERXY 0 Level record adjustment enable, 0 @ write
 CA-LETXY 0 Level tape adjustment enable 0 @ write
 CA-LLADB 0 Operating line level 10 dBm, 1 @ on
 CA-LL0DB 0 Operating line level 0 dBm, 1 @ on
 CA-LL4DB 0 Operating line level 4 dBm, 1 @ on
 CA-LL8DB 0 Operating line level 8 dBm, 1 @ on
 CA-LSBTC 0 Data load least sign bit time code, 1 @ load
 CA-LSWXY 0 Line amplifier switching, 1 @ write
 CA-MONO 0 Mono-stereo-switch, 0 @ mono mode
 CA-MSBTC 0 Data load most sign bit time code, 1 @ load
 CA-MUTXY 0 Muting of line output, 1 @ mute
 CA-RSWXY 0 Electronics 1.820.712/713: Record drop in/out
 CA-RSWXY 1 switching enable 1 @ write
 CA-RSWXY 2 Electronics 1.820.811/812/813: Dolby HX Pro Switching 1 @ on
 CA-RS1TC 0 Read source time code
 CA-RS2TC 0 Read source time code
 CA-SAFE 0 Audio safe, reproduce mode, 1 @ safe
 CA-SIGNL 0 Switching Meter or Test 0 @ Meter, 1 @ Test
 CA-SWTCH 0 Switching Input or Tone test generator 0 @ Input, 1 @ Gen.
 CA-SYNXY 0 Sync signal on output, 0 @ Sync on
 CA-TRRXY 0 Treble record adjustment enable, 0 @ write
 CA-TRTXY 0 Treble tape adjustment enable, 0 @ write
 CA-WLOTX 0 Write level time code
 CA-WL1TC 0 Write level time code
 CA-WL2TC 0 Write level time code
 CA-WL3TC 0 Write level time code

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CA-WRTTC 0 Write time code, 1 @ write
 CDIR 0 Output signal capstan motor direction
 CDIR 1 0 @ direction REVERSE PLAY, 1 @ direction PLAY
 CD-SETUP 0 1 @ Setup (calibration)
 CPHASE-R 0 Capstan motor supply voltage, phase R
 CPHASE-S 0 Capstan motor supply voltage, phase S
 CPHASE-T 0 Capstan motor supply voltage, phase T
 CTS 0

DCPHT-L 0 DC Phase T left
 DCPHT-R 0 DC Phase T right
 DCPHR-L 0 DC Phase R left
 DCPHR-R 0 DC Phase R right

EQUAL-XY 0
 ERACS-XY 0 Erase current off, 0 @ current off
 ERAHH-TC 0 Erase head, high, time-code
 ERAHH-XY 0 Erase head, high
 ERAHL-TC 0 Erase head, low, time-code
 ERAHL-XY 0 Erase head, low
 ERAHM-XY 0 Erase head, medium
 ERAHO-XY 0 Erase head, screen

F-LINE1 0 Power line from main fuse
 F-LINE2 0
 FAD1 0 FADER START (WIRE A), 5 V TO 30 V @ PLAY
 FAD2 0 Fader start (wire B), 5 V to 30 V @ PLAY
 FRMGND 0

GND 0 Ground

INPAD-XY 0 Input, adjusted
 INPAU-XY 0 Input, uncalibrated
 INPDI-XY 0 Input, direct
 IR-REFEX 0 Input external reference for capstan PLL

K-BRAKE 0 Brake solenoid
 K-BRAKEL 0 Brake solenoid left
 K-BRAKER 0 Brake solenoid right
 K-EDIT 0 Edit solenoids
 K-LIFT 0 Lift solenoid
 K-PRESS 0 Press solenoid
 K-PRESSA 0
 K-PRESSB 0
 K-REC-XY 0 Record relay / sync muting, 0 @ record on / sync muting
 K-STDBY 0
 K-TTSL 0 Solenoid tape tension sensor left
 K-TTSR 0 solenoid tape tension sensor right

LINE1 0 Power line
 LINE2 0 Power line
 LINFA-TC 0 Time-code-line-input, amplifier (wire A)
 LINFA-XY 0 Line-input, amplifier (wire A)
 LINFB-TC 0 Time-code-line-input, amplifier (wire B)
 LINFB-XY 0 Line-input, amplifier (wire B)
 LINSa-TC 0 Time-code-line-input, machine (wire A)
 LINSa-XY 0 Line-input, machine (wire A)
 LINSB-TC 0 Time-code-line-input, machine (wire B)
 LINSB-XY 0 Line-input, machine (wire B)
 LOUFA-TC 0 Time-code-line-output, amplifier (wire A)

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SEITE 7

LOUFA-XY 0 Line-output, amplifier (wire A)
LOUFB-TC 0 Time-code-line-output, amplifier (wire B)
LOUFB-XY 0 Line-output, amplifier (wire B)
LOUSA-TC 0 Time-code-line-output, machine (wire A)
LOUSA-XY 0 Line-output, machine (wire A)
LOUSB-TC 0 Time-code-line-output, machine (wire B)
LOUSB-XY 0 Line-output, machine (wire B)

MONIT-XY 0 Monitor-signal
 MONITAMP 0 Monitor-signal, from volume control

 OR-CMCLK 0 Output signal capstan motor move clock
 OR-MVCLK 0 Output signal tape move clock
 OR-MVDIR 0 Output signal tape move direction 0 @ direction REWIND
 OR-MVDIR 1 1 @ direction FORWARD
 OR-SYENB 0 Output signal to synchronizer,
 OR-SYENB 1 enable for synchronizer mode 0 @ enable

 PENB-L 0 Power enable left 0 @ enable
 PENB-R 0 Power enable right 0 @ enable
 PRIMV-1 0 Mains transformer, primary
 PRIMV-2 0 Mains transformer, primary
 PRIMV-3 0 Mains transformer, primary
 PRIMV-5 0 Mains transformer, primary
 PRIMV-6 0 Mains transformer, primary
 PRIMW-1 0 Mains transformer, primary
 PRIMW-2 0 Mains transformer, primary
 PRIMW-3 0 Mains transformer, primary
 PRIMW-4 0 Mains transformer, primary
 PRIMW-5 0 Mains transformer, primary
 PRIMW-6 0 Mains transformer, primary
 PRIMW-7 0 Mains transformer, primary
 PWMPL-H1 0
 PWMPL-H2 0
 PWMPL-L1 0
 PWMPL-L2 0
 PWMPL-L3 0
 PWMPL-L4 0
 PWMPL-L5 0
 PWMPL-L6 0
 PWMPR-H1 0
 PWMPR-H2 0
 PWMPR-L1 0
 PWMPR-L2 0
 PWMPR-L3 0
 PWMPR-L4 0
 PWMPR-L5 0
 PWMPR-L6 0

 RCCOMM 0
 RCV-232 0
 RCVDATA 0
 RECEIVA 0
 RECEIVB 0
 RECEIVCM 0
 RECHH-TC 0 Record head, high, time-code
 RECHH-XY 0 Record head, high
 RECHL-TC 0 Record head, low, time-code
 RECHL-XY 0 Record head, low
 RECIN-XY 0 Record amplifier, input
 REFLEV 0 Reference level DC for VU Meter compair
 REPHH-TC 0 Reproduce head, high, time-code
 REPHH-XY 0 Reproduce head, high
 REPHL-TC 0 Reproduce head, low, time-code
 REPHL-XY 0 Reproduce head, low
 REPRE-XY 0
 REPRO-XY 0

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SEITE 9

S-AKBENA 0 Audio parameter keyboard enabled @ 1
 S-CADEQU 0 Common adjust for equalization (CCIR levels = NAB levels)
 S-EHEAD1 0 Type of erase head {AB=10 @ full track, AB=11 @ time code
 S-EHEAD2 0 {AB=01 @ two track, AB=00 @ record def.
 S-EQUAL 0
 S-FORW 0 0 @ FORWARD command
 S-INP-XY 0 0 @ INPUT command
 S-LINELA 0 Line operating level setting { AB=00 @ 0 dBm, AB=10 @ 4 dBm
 S-LINELB 0 { AB=01 @ 8 dBm, AB=11 @ 10 dBm
 S-LINE1 0 Power line from mains switch
 S-LINE2 0 Power line from mains switch
 S-LLLSDB 0 Line level lowest significant bit
 S-LLMSDB 0 Line level most significant bit
 S-LOC1 0 Key on command unit 0 @ LOC1 command
 S-NABCCI 0 Audio parameter equal. for CCIR and NAB
 S-PLAY 0 Key on command unit 0 @ PLAY command
 S-PLCNTR 0 Parallel control of audio channels, 0 @ parallel
 S-REA-XY 0 Key on channel control 0 @ READY command
 S-REC 0 Key on command unit 0 @ RECORD command
 S-RECAPT 0
 S-REP-XY 0 Key on channel control 0 @ REPRODUCE command
 S-RESET 0 Key on command unit 0 @ RESET command
 S-REW 0 Key on command unit 0 @ REWIND command
 S-SAF-XY 0 Key on channel control 0 @ SAFE command
 S-SPEEDA 0 0 @ SLOW speed 0 @ on command
 S-SPEEDB 0 0 @ FAST speed 0 @ on command
 S-STOP 0 Key on command unit 0 @ STOP command
 S-SYN-XY 0 Key on channel control 0 @ SYNC command
 S-TRANSF 0 Key on command unit 0 @ TRANSFER command to LOC memory
 S-XKEY 0 Key on command unit 0 @ on command
 S-YKEY 0 Key on command unit 0 @ on command
 S-ZKEY 0 Key on command unit 0 @ on command
 S-OLOC 0 Key on command unit 0 @ OLOC command
 SF-LINE1 0 Power line from mains filter
 SF-LINE2 0 Power line from mains filter
 SHIELD 0
 SIGN.GND 0
 SIN1-L 0 PWR-Sinus1 cmos logic left
 SIN1-R 0 PWR-Sinus1 cmos logic right
 SIN2-L 0 PWR-Sinus1 cmos logic left
 SIN2-R 0 PWR-Sinus1 cmos logic right
 SNCOMM 0
 SND-232 0
 SNDATA 0
 SPARE 0
 SR-FADRY 0 0 @ FADER START READY command from remote control
 SR-FORW 0 0 @ FORWARD command from remote control
 SR-LIFT 0 0 @ LIFTER command from remote control
 SR-LOCST 0 0 @ LOC START command from remote control
 SR-LOC1 0 0 @ LOC1 command from remote control
 SR-MUTE 0 0 @ MUTE command from remote control
 SR-PLAY 0 0 @ PLAY command from remote control
 SR-REC 0 0 @ RECORD command from remote control
 SR-REHSL 0 0 @ REHEARSAL command from remote control
 SR-RESET 0 0 @ RESET TIMER command from remote control
 SR-REW 0 0 @ REWIND command from remote control
 SR-STOP 0 0 @ STOP command from remote control
 SR-TRANS 0 0 @ TRANSFER command from remote control
 SR-VRSPD 0 0 @ VARISPEED command from remote control
 SR-OLOC 0 0 @ ZERO LOC command from remote control

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STABIN-1 0 Stabilizer input
STABIN-3 0 Stabilizer input
STABIN-4 0 Stabilizer input
STABIN-5 0 Stabilizer input
STABIN-6 0 Stabilizer input
STUBUS1 0 STUDER bus line symmetrical
STUBUS2 0 STUDER bus line symmetrical
SYNHH-XY 0 Record head, high, sync mode
SYNHL-XY 0 Record head, low, sync mode
SYPRE-XY 0
SYS-CTS 0 Synchronizer SSDA clear to send
SYS-DTR 0 Synchronizer SSDA data terminal ready
SYS-RX 0 Synchronizer SSDA receive data
SYS-TX 0 Synchronizer SSDA transmitter data

T-ACSTR 0 Audio controller strobe
T-ADOPT1 0 Audio VU-panel int/ext          1 @ VU-panel extern
T-ADRX 0 Address bus, micro processor bus TTL
T-ADRY 0 Address bus, micro processor bus TTL
T-ADRZ 0 Address bus, micro processor bus TTL
T-BUSSW 0
T-CAPON 0 Capstan control on/off          0 @ on
T-CLK1 0 Clock 1 from tape move sensor
T-CLK2 0 Clock 2 from tape move sensor
T-CMCLK 0 Capstan motor, move clock
T-CTS 0
T-CUSTR 0 Control unit strobe
T-DATA0 0 Data bus
T-DATA1 0 Data bus
T-DATA2 0 Data bus
T-DATA3 0 Data bus
T-DATA4 0 Data bus
T-DATA5 0 Data bus
T-DATA6 0 Data bus
T-DATA7 0 Data bus
T-DIR 0 Tape move direction              1 @ forward
T-DRVENB 0 Drivers ser. IF enable/disable 0 @ driver's enabled
T-DT-CH1 0 Data for channel 1, MUX bus
T-DT-CH2 0 Data for channel 2, MUX bus
T-DT-CH3 0 Data for channel 3, MUX bus
T-DT-MP 0 Data for master panel, MUX bus
T-DT-RES 0 Available data line
T-DT-RP1 0 Data for parallel remote panel, MUX bus
T-DT-RP2 0 Data for parallel remote panel, MUX bus
T-DT-SJM 0 Data for jumpers ser. IF mode control, MUX bus
T-ENB 0 Processor's clock (1.2288 MHz)
T-IRQ 0 Processor's interrupt line
T-LEDL 0 0 @ tape end
T-LEDR 0 0 @ tape end
T-MECHTM 0                               1 @ move
T-MODSEL 0
T-MONMUT 0 Monitor muting for fader mode, 0 @ monitor muting
T-MRS-XY 0 Control of Dolby NRS,         0 @ processor on input
T-NMI 0
T-NOMSPD 0
T-POS1 0 Position sensor 1
T-POS2 0 Position sensor 2
T-PWRON 0 Power on (AC detection)         1 @ on
T-READSL 0 Select read mode, MUX bus
T-REFEXT 0 Capstan PLL, external reference (vari-speed)

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SEITE 11

T-REFINT	0	Internal reference for capstan (9.6 kHz)	
T-REFSEL	0	Speed reference select	0 @ varispeed
T-RESET	0	System reset line	
T-RTS	0		
T-RVSTR	0		
T-RW	0	Processor's read/write	1 @ read
T-RX	0	Serial IF read line	
T-SADA	0	Address A, MUX bus	
T-SADB	0	Address B, MUX bus	
T-SADC	0	Address C, MUX bus	
T-SL1	0		
T-SPDSL	0	Capstan speed select	IPS | 30 | 15 | 7.5 | 3.75 |
T-SPDSL1	1	Capstan speed select	| 0 | 0 | 1 | 1 |
T-SPDSL2	0	Capstan speed select	| 0 | 1 | 1 | 0 |
T-SUPVON	0	Supply voltages on (DC detection)	1 @ on
T-SYNCAP	0	Capstan synchronisation	0 @ sync
T-TC/RC	0		
T-TCINDL	0	Time-code input delay	
T-TCINRC	0	Time code signal (via R-C) for monitor-INPUT	
T-TCOUDL	0	Time-code output delay	
T-TCOURC	0	Time code signal (via R-C) for monitor-OUTPUT	
T-TCPRES	0	Time code present	
T-TDSTR	0	Tape deck controller strobe	0 @ selected
T-TENDL	0	Tape end sensor, left	0 @ tape end
T-TENDR	0	Tape end sensor, right	0 @ tape end
T-TNDL	0		
T-TNDR	0		
T-TPSPD1	0	Tape spooling speed	
T-TPSPD2	0	Tape spooling speed	
T-TX	0	Serial IF, send line	
T-VARSPD	0	0 @ external reference for capstan motor control	
T-WRTSL	0	Write select, MUX bus	
T-WCLK1L	0	Wind clock 1 left (Motor tacho)	
T-WCLK1R	0	Wind clock 1 right (Motor tacho)	
T-WCLK2L	0	Wind clock 2 left (Motor tacho)	
T-WCLK2R	0	Wind clock 2 right (Motor tacho)	
TA-ACTM0	0	Mono-stereo-switch stand by,	0 @ switch missing
TA-ACTTC	0	Time-code channel record section stand by	
TA-ACTTC	1		0 @ defect or missing
TA-ACTXY	0	Channel record section stand by,	0 @ defect or missing
TA-AUIR	0	Audio interrupt	
TA-CLK	0	Audio clock (307.2 KHz)	
TA-CMPXY	0	Audio level compair for VU Meter,	0 @ higher like REFLEV
TAPAD-XY	0	Tape-signal, adjusted	
TAPAU-XY	0	Tape-signal, uncalibrated	
TAPDI-XY	0	Tape direct	
TAPLI-XY	0	Check point	
TAPMS-XY	0	Tape-signal, after mono-stereo-switch	
TC-ADRO	0		
TC-ADR1	0		
TC-ADR2	0		
TC-CAPDC	0	Capstan direction control	0 @ forward
TC-CDIRI	0		
TC-CPREF	0	Reference signal	9.6 kHz @ nominal speed
TC-DATA0	0		
TC-DATA1	0		
TC-DATA2	0		
TC-DATA3	0		
TC-DATA4	0		
TC-DATA5	0		

TC-DATA6 0
TC-DATA7 0
TC-ENB 0
TC-ENBG 0
TC-EREF 0
TC-HALL1 0 Hall element nr. 1, signal output
TC-HALL2 0 Hall element nr. 2, signal output
TC-HALL3 0 Hall element nr. 3, signal output
TC-INEX 0
TC-IRQ 0
TC-REF 0
TC-REFP 0
TC-RESET 0
TC-RESMP 0
TC-RW 0
TC-SL1 0
TC-SL2 0
TC-SL3 0
TC-TCDIR 0
TC-TCMV 0
TC-TCMVI 0
TD-ADRO 0
TD-ADR1 0
TD-ADR2 0
TD-ADR3 0
TD-BUSSW 0
TD-CAPSY 0 Capstan Synchronization, 0 @ synchron
TD-CLK 0 Clock for spooling motor control (76.8 KHz)
TD-CRES 0 Capstan reset 0 @ reset
TD-C307K 0 Clock for motor supply
TD-C614K 0 Clock for spooling motor driver (PWM)
TD-C76K 0
TD-DATA0 0
TD-DATA1 0
TD-DATA2 0
TD-DATA3 0
TD-DATA4 0
TD-DATA5 0
TD-DATA6 0
TD-DATA7 0
TD-DIRL 0 Motor direction left
TD-DIRR 0 Motor direction right
TD-DRENB 0
TD-E 0 Processor clock (1.2288 MHz)
TD-ENB 0
TD-ENG 0 Enable gated (write delayed)
TD-EVENT 0 Start event @ lower edge
TD-HEACT 0 Head contact, 0 @ contact
TD-ICRE1 0
TD-ICRE2 0
TD-ICRE3 0
TD-ICRE4 0
TD-ICRE5 0
TD-IRQ 0 Interrupt for tape deck
TD-MFL 0 Tape deck motor frequency left
TD-MFR 0 Tape deck motor frequency right
TD-MOVE 0 Tape move indicator, 0 @ move
TD-MOVE1 0 Move signal 1
TD-MOVE2 0 Move signal 2
TD-MVCLK 0 Move sensor clock

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SEITE 13

TD-MVCKS	0	Move clock symetric (50% duty cicle)	
TD-MVDIR	0	Move sensor direction,	1 @ forward
TD-NMI	0		
TD-PAVS	0	Sinus print available	
TD-PAV1	0	Print 1 available	
TD-PAV2	0	Print 2 available	
TD-PAV3	0	Print 3 available	
TD-PENB	0	Power enable	0 @ enable
TD-PENBL	0	Enable for motor driver left	0 @ enable
TD-PENBR	0	Enable for motor driver right	0 @ enable
TD-PWENB	0	Enable for supply motors	
TD-RALC1	0	Roller assembly, motor left, clock 1	
TD-RALC2	0	Roller assembly, motor left, clock 2	
TD-RALEN	0	Roller assembly, motor left, enable,	0 @ enable
TD-RALP1	0	Roller assembly, motor left, position 1	
TD-RALP2	0	Roller assembly, motor left, position 2	
TD-RARC1	0	Roller assembly, motor right, clock 1	
TD-RARC2	0	Roller assembly, motor right, clock 2	
TD-RAREN	0	Roller assembly, motor right, enable	0 @ enable
TD-RARP1	0	Roller assembly, motor right, position 1	
TD-RARP2	0	Roller assembly, motor right, position 2	
TD-RES	0	Tape deck reset	
TD-RESET	0		
TD-RESMP	0		
TD-RESIN	0	Watch dog output	0 @ reset
TD-RW	0		
TD-RX	0		
TD-SCK	0	Sinus clock control	
TD-SHLD	0	Head block shield,	0 @ closed
TD-SL2	0		
TD-SL3	0		
TD-SL4	0	Spooling motor control and periphery controller	
TD-SL5	0	Tape deck serial interface	
TD-SL6	0	Counter - Timer	
TD-SL7	0		
TD-SYNC	0	Lower edge = sync	
TD-TCM1	0	Tachosignal 1, capstan motor	
TD-TCM2	0	Tachosignal 2, capstan motor	
TD-TML1	0	Tacho signal 1, motor left	
TD-TML2	0	Tacho signal 2, motor left	
TD-TMR1	0	Tacho signal 1, motor right	
TD-TMR2	0	Tacho signal 2, motor right	
TD-TRSP	0	Optical sensor in tape guide,	0 @ no tape, transparent tape
TD-TRSPR	0	Optical sensor in tape guide	0 @ transparent red
TD-TX	0		
TD-WCLKL	0	Motor wind clock left (4 edges)	
TD-WCLKR	0	Motor wind clock right (4 edges)	
TD-WDIRL	0	Motor direction left	
TD-WDIRR	0	Motor direction right	
TD-YTRSP	0	Optical sensor in tape guide	analog 0 V @ no tape
TD-YTRSP	1		analog 12 V @ with tape
TD-15VSC	0	+/-15V supply control	
TD-24VSC	0	24V supply control	
TD-307K	0		
TD-76K8	0	Reference frequency	
TD-9600	0		
TDS-CLK	0	Tape deck SSDA clock	
TDS-CTS	0	Tape deck SSDA clear to send	
TDS-DTR	0	Tape deck SSDA data terminal ready	
TDS-RX	0	Tape deck SSDA receive data	

TDS-TX 0 Tape deck SSDA transmitter data
TL-A0 0
TL-CS 0
TL-D0 0
TL-D1 0
TL-D2 0
TL-D3 0
TL-D4 0
TL-D5 0
TL-D6 0
TL-D7 0
TL-ENB 0
TL-RESET 0
TL-WR 0
TM-A 0
TM-ADRO 0 Address bus, micro processor bus TTL
TM-ADR1 0 Address bus, micro processor bus TTL
TM-ADR2 0 Address bus, micro processor bus TTL
TM-ADR3 0 Address bus, micro processor bus TTL
TM-B 0
TM-BUSSW 0
TM-C 0
TM-CUE1 0 Cue tachometer signal 1
TM-CUE2 0 Cue tachometer signal 2
TM-C307K 0
TM-C614K 0
TM-C76K 0
TM-C9600 0
TM-D 0
TM-DADRO 0
TM-DADR1 0
TM-DADR2 0

A810 / A812 / A820 - SIGNAL LIST

89/06/10

SEITE 15

TM-DATA0 0 Data bus
TM-DATA1 0 Data bus
TM-DATA2 0 Data bus
TM-DATA3 0 Data bus
TM-DATA4 0 Data bus
TM-DATA5 0 Data bus
TM-DATA6 0 Data bus
TM-DATA7 0 Data bus
TM-DENB 0
TM-DP 0
TM-DRENB 0
TM-DRES 0
TM-DRW 0
TM-DSL4 0
TM-DSL5 0
TM-D0 0
TM-D1 0
TM-D2 0
TM-D3 0
TM-D4 0
TM-D5 0
TM-D6 0
TM-D7 0
TM-D8 0
TM-D9 0
TM-E 0
TM-ENB 0
TM-EN0 0
TM-EN1 0
TM-EN2 0
TM-EN3 0
TM-EN4 0
TM-F 0
TM-G 0
TM-IADR0 0
TM-IADR1 0
TM-IADR2 0
TM-IENB 0
TM-IRES 0
TM-IRQ 0 Master processor interrupt request line
TM-IRW 0
TM-ISL4 0
TM-ISL5 0
TM-KBIR 0 Keyboard interrupt
TM-L1 0
TM-L2 0
TM-L3 0
TM-NMI 0
TM-REMIR 0 Remote interrupt
TM-RES 0
TM-RESET 0 Signal from watch-dog
TM-RESMP 0
TM-RL0 0
TM-RL1 0
TM-RL2 0
TM-RL3 0
TM-RL4 0
TM-RL5 0
TM-RL6 0
TM-RL7 0

TM-RW	0	
TM-RX	0	
TM-SEIR	0	SMPTE interrupt
TM-SHIR	0	Shuttle interrupt
TM-SL2	0	Master processor periphery select 2
TM-SL3	0	
TM-SL4	0	
TM-SL5	0	
TM-SL6	0	
TM-SL7	0	
TM-TX	0	
TM-9600	0	
TO-CLK	0	Tape move clock parallel remote
TO-DIR	0	Tape move direction parallel remote
TONGEN	0	Tone test generator -6 dBm Veff, @ operating level
TR-A	0	
TR-B	0	
TR-REFEX	0	
TRANSA	0	
TRANSB	0	
TRANSCM	0	
TS-ADCH1	0	Audio adjust, channel 1
TS-ADCH2	0	Audio adjust, channel 2
TS-CH1	0	Key on board for audio alignment, 0 @ on command
TS-CH2	0	Key on board for audio alignment, 0 @ on command
TS-DOWN	0	Key on board for audio alignment, 0 @ on command
TS-STORE	0	Key on board for audio alignment, 0 @ on command
TS-UP	0	Key on board for audio alignment, 0 @ on command
TSRC-BIA	0	Key on board for audio alignment, 0 @ on command
TSRC-LVL	0	Key on board for audio alignment, 0 @ on command
TSRC-TRB	0	Key on board for audio alignment, 0 @ on command
TSRP-BAS	0	Key on board for audio alignment, 0 @ on command
TSRP-LVL	0	Key on board for audio alignment, 0 @ on command
TSRP-TRB	0	Key on board for audio alignment, 0 @ on command
VU-A-XY	0	VU-Meter-signal, wire A
VU-B-XY	0	VU-Meter-signal, wire B
Y-ACMUA	0	Output voltage mains unit
Y-ACMUB	0	Output voltage mains unit
Y-ACMUC	0	Output voltage mains unit
Y-ACMUD	0	Output voltage mains unit
Y-PSENB	0	Mains unit motor supply enable 1 @ enable
Y-TSENS1	0	Temperature sensitive signal sensor 1
Y-TSENS2	0	Temperature sensitive signal sensor 2
O-TACHO	0	Tacho sensor capstan motor
OCAPMOT	0	
OPSVTMOT	0	Ground power supply voltage for torque motors
O.OVREF	0	0.0V Power reference

STUDER A812

* WILLI STUDER AG * G R O U P S U M M A R Y * 89/10/25 * 10:16 * P A G E 3 *

* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

ASY	GRP	PART NUMBER	DESCRIPTION	UNUSED PINS	USED PINS	TOT.PINS	MULT.PINS	COO.KEYS	TOT.ELM	REM
		1 54.42.0001	POWER INPUT	0	5	5	0	0	2	
		2 55.12.0001	POWER SWITCH	0	4	4	0	0	1	
		3	LINE FILTER	0	4	4	0	0	1	
		4 53.03.0131	VOLTAGE SELECTOR	0	8	8	0	0	1	
		5	CHASSIS CONNECTORS	0	5	5	0	0	2	
		6 1.811.525.00	MAIN TRANSFORMER	8	36	44	0	0	5	
		7	DISTRIBUTOR	4	48	52	0	0	12	
		8 1.811.770.00	POWER SUPPLY CONNECTION BOARD	8	31	39	0	1	7	
		9		0	16	16	0	0	6	
		10 1.811.799.00	FAN CONNECTION BOARD	18	10	28	0	0	3	
		11	SUPPLY CABLE, SP. MOT. DRIVE AMP.	4	14	18	0	0	3	
		12	SUPPLY CABLE, SPOOLING MOTOR, LEFT	5	9	14	0	0	3	
		13	SUPPLY CABLE, SPOOLING MOTOR, RIGHT	5	7	12	0	0	2	
		14	SENSOR CABLE, SUPPLY CONTROL	5	10	15	0	0	2	
		19 1.820.591.00	SUPPLY CABLE, ELECTRONICS	0	48	48	0	0	2	
		20 1.811.700.00	BASIS BOARD	62	1192	1254	0	18	60	
		24 1.811.772.00	SPOOLING MOTOR CONTROLLER	3	43	46	0	0	3	
		25 1.811.779.00	TAPE DECK PERIPHERY DRIVER	10	143	153	0	1	8	
		26 1.811.773.00	TAPE DECK PERIPHERY INTERFACE	3	63	66	0	0	2	
		27 1.811.774.00	TAPE DECK CONTROLLER	3	105	108	0	1	5	
		30 1.820.790.00	SWITCHING STABILIZER	2	34	36	0	0	2	
		31 1.811.771.00	SPOOLING MOTOR DRIVE AMPLIFIER LEFT	2	20	22	0	0	3	
		32 1.811.771.00	SPOOLING MOTOR DRIVE AMPLIFIER RIGHT	2	20	22	0	0	3	
		33 1.820.729.00	SERIAL REMOTE INTERFACE	3	32	35	0	1	2	
		34	CONN. REMOTE CONTR./SYNCHRONIZER/BUS	2	54	56	0	3	3	
		35 1.820.738.00	PARALLEL REMOTE INTERFACE	2	115	117	0	2	5	
		36 1.328.264.00	CHANNEL REMOTE IF	25	102	127	0	2	4	
		40 1.820.749.00	INTERFERENCE FILTER, CH 01	0	12	12	0	2	4	
		41 1.820.749.00	INTERFERENCE FILTER, CH 02	0	12	12	0	2	4	
		42 1.820.749.00	INTERFERENCE FILTER, TIME CODE	0	12	12	0	2	4	
		43	CONNECTORS TO VU PANEL, EXTERNAL	8	93	101	0	0	5	
		45 1.810.763.00	NOISE REDUCTION SYSTEM CONTROLL BOAR	11	28	39	0	2	2	D
		46	SMPTE/EBU BUS	0	18	18	0	0	2	
		50 1.811.777.00	PUSHBUTTON / DISPLAY BOARD	4	52	56	0	0	2	
		51 1.328.215.00	EDIT ASSEMBLY	0	13	13	0	0	2	
		52 1.811.776.00	TAPE DECK DISPLAY DRIVER	1	105	106	0	0	4	
		53 1.811.778.00	SUBPANEL PUSH BUTTON BOARD	3	13	16	0	0	1	
		54 1.811.233.00	LCD DISPLAY UNIT	0	16	16	0	0	1	
		58 1.820.861.00	TIMER CONTROL BOARD	0	34	34	0	0	3	
		59 1.820.737.00	FUSE/SUPPLY FAILURE DETECTOR	1	15	16	0	0	1	
		60 1.811.250.00	MONITOR UNIT	12	34	46	0	2	7	
		70 1.820.794.00	DISTRIBUTION BOARD	21	169	190	0	6	13	
		71 1.820.580.00	MONITOR UNIT	12	34	46	0	2	7	
		72 1.811.888.00	CONNECTION BOARD	0	0	0	0	0	0	
		80	LIFT SOLENOID	0	2	2	0	0	1	
		81	PRESS ASSEMBLY	4	12	16	0	0	4	
		82 1.811.110.00	TAPE TENSION UNIT, LEFT	8	33	41	0	1	5	
		83 1.811.120.00	TAPE TENSION UNIT, RIGHT	9	33	41	0	1	5	
		84 1.021.695.00	CAPSTAN MOTOR (ELECTRONICS BOARD)	13	15	28	0	0	5	
		85 1.820.774.00	CAPSTAN MOTOR DRIVE AMPLIFIER	1	33	34	0	0	3	
		86	BRAKE ASSEMBLY	2	4	6	0	0	2	

* WILLI STUDER AG * G R O U P S U M M A R Y * 89/10/25 * 10:16 * P A G E 4 *

* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

ASY	GRP	PART NUMBER	DESCRIPTION	UNUSED PINS	USED PINS	TOT.PINS	MULT.PINS	COO.KEYS	TOT.ELM	REM
		87	SPOOLING MOTOR, LEFT	6	10	16	0	0	2	
		88	SPOOLING MOTOR, RIGHT	6	10	16	0	0	2	
		90	HEAD BLOCK ASSEMBLY, 2 CH, TIME CODE	22	42	64	0	0	2	
			DISTRIBUTED IN 54 GRP TOTAL :	319	3032	3351	0	49	245	

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 5 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

GRP 1 54.42.0001
 POWER INPUT

ELM 1
 CONNECTOR POWER INPUT P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	LINE1	1	J		
2	LINE2	6	J		
3	GND	5-4	J		

ELM 2
 FUSE (LINE) F01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	F-LINE1	1	J		
2	S-LINE1	1	J		

GRP 2 55.12.0001
 POWER SWITCH

ELM 1
 POWER SWITCH S01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	LINE1	1	J		
2	LINE2	6	J		
3	S-LINE1	1	J		
4	S-LINE2	6	J		

GRP 3
 LINE FILTER

ELM 1
 LINE FILTER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	F-LINE1	1	J		
2	S-LINE2	6	J		
3	SF-LINE1	1	J		
4	SF-LINE2	6	J		

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 6 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

<-- <-- <-- CONTINUATION

GRP 4 53.03.0131
 VOLTAGE SELECTOR

ELM 1
 VOLTAGE SELECTOR

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	SF-LINE2	6-8	L		
2	PRIMW-3	3	L		
3	PRIMW-7	7	L		
4A	PRIMW-4	4-4	L		
4B	PRIMW-6	6-4	L		
5	PRIMW-1	1	L		
6	PRIMW-5	5	L		
7	SF-LINE1	1-2	L		

GRP 5
 CHASSIS CONNECTORS

ELM 1
 EARTH CONTACTS

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	GND	5-4	J		
2	GND	0	J		
3	GND	0	J		
4	GND	0	J		

ELM 2
 EARTH TERMINAL

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	GND				

GRP 6 1.811.525.00
 MAIN TRANSFORMER

ELM 1 1.811.521.00
 PRIMARY 1

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	PRIMW-1	1	Y		
2	SF-LINE1	2	Y		
3	PRIMW-3	3	Y		
4	PRIMW-4	4	Y		

ELM 2 1.811.522.00
 PRIMARY 2

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
5	PRIMW-5	5	Y		
6	PRIMW-6	6	Y		
7	PRIMW-7	7	Y		
8	SF-LINE2	8	Y		

ELM 3 1.811.523.00
 SECONDARY 1

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
9	ACPWE-B3	9	Y		
10	ACPWM-C3	0	Y		
11	ACPWE-C2	0	Y		
12	ACPWE-C1	0	Y		
13	ACPWM-C2	0	Y		
14	ACPWM-C1	0	Y		
15	ACPWM-A1	5	Y		
16	ACPWM-A2	6	Y		
17	ACPWE-A1	7	Y		
18	ACPWE-A2	8	Y		
19	ACPWM-A3	9	Y		
20	ACPWE-A3	0	Y		

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STUDER A812

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 7 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

<-- <-- <-- CONTINUATION

GRP 6 1.811.525.00
 <-- <-- <-- CONTINUATION

ELM 4 1.811.524.00 SECONDARY 2				
PNT	SIGNAL NAME	COLOR	LV	TYPE F
9	ACPWE-B3	9	Y	
10	ACPMW-B3	0	Y	
11	ACPWE-B2	1	Y	
12	ACPWE-B1	2	Y	
13	ACPMW-B2	3	Y	
14	ACPMW-B1	4	Y	
15	ACPMW-C1	0	Y	
16	ACPMW-C2	0	Y	
17	ACPWE-C1	0	Y	
18	ACPWE-C2	0	Y	
19	ACPMW-C3	0	Y	
20	ACPWE-A3	0	Y	

ELM 6 TO GRP08, ELM06 P01				
PNT	SIGNAL NAME	COLOR	LV	TYPE F
1				
2				
3				
4				
5	ACPMW-B2	3	F	
6	ACPMW-A2	6	F	
7				
8	ACPMW-B1	4	F	
9	ACPMW-A1	5	F	
10				
11				
12				

GRP 7 DISTRIBUTOR

ELM 1 DISTRIBUTOR				
PNT	SIGNAL NAME	COLOR	LV	TYPE F
1A	ACPWE-D1	8	K	
1B	ACPWE-D1	8	K	
1C				
1D	ACPWE-D1	9	K	
2A				
2B	ACPWE-A2	8	K	
2C	ACPWE-A1	7	K	
2D	ACPWE-A1	6	K	
3A	ACPWE-B1	5	K	
3B	ACPWE-B1	2	K	
3C	ACPWE-B2	1	K	
3D	ACPWE-B1	5	K	

ELM 2 53.03.0106
FUSE, POSITIVE SUPPLY F..

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	ACPWE-A1	6	L	
2	ACPWE-D1	8	L	

ELM 3 53.03.0106
FUSE, NEGATIVE SUPPLY F..

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1A	ACPWE-A3	0	L	
1B	ACPWE-A3	0	L	
2	ACPWE-D3	5	L	

ELM 4 FUSE, CAPSTAN MOTOR SUPPLY F..

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	ACPMW-A3	9	L	
2	ACPMW-D3	1	L	

GRP 7 <-- <-- <-- CONTINUATION

ELM 5 70.01.0231 D01				
PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	ACPWE-D1	8	L	
2	ACPWE-B1	5	L	
3	+STABIN	2	L	
4	+ 0.0	0	L	

ELM 6 70.01.0231 D02

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	ACPWE-D3	5	L	
2A	ACPWE-B3	9	L	
2B	ACPWE-B3	9	L	
3	+ 0.0	0	L	
4	-STABIN	6	L	

ELM 7 70.01.0231 D03

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	ACPMW-D3	1	L	
2	ACPMW-B3	0	L	
3	+CAPMOT	2	L	
4	OCAPMOT	4	L	

ELM 8 59.26.7103 C04

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	+STABIN	2	L	
2	+ 0.0	0	L	

ELM 9 59.26.7103 C05

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	+STABIN	2	L	
2	+ 0.0	0	L	

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 8 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

<-- <-- <-- CONTINUATION

GRP 7 <-- <-- <-- CONTINUATION

ELM 10 59.26.7103 C06				
PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	+ 0.0	0	L	
2	-STABIN	6	L	

ELM 11 59.26.7103 C07

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	+CAPMOT	2	L	
2	OCAPMOT	4	L	

ELM 12 CONNECTOR TO GRP30, ELM01 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	+STABIN	2	M	
2	+ 0.0	0	M	
3	+ 0.0	0	M	
4	+STABIN	2	M	
5	+ 0.0	0	M	
6	-STABIN	6	M	
7	+CAPMOT	2	M	
8				
9	OCAPMOT	4	M	
10	ACPWE-D1	9	M	
11				
12	ACPWE-B1	5	M	

GRP 8 1.811.770.00
POWER SUPPLY CONNECTION BOARD

ELM 1 AC INPUT

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1				
2				
3				
4				
5	ACPMW-B2	M		
6	ACPMW-A2	M		
7				
8	ACPMW-B1	M		
9	ACPMW-A1	M		
10				
11				
12				

ELM 2 CONN. SUPPLY CONTROL (GRP25, ELM02)

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	-UCOMP			
2	Y-TSENS1			
3	+UCOMP			
4	Y-TSENS2			
5	OPSVTMOT			
6	KEY			
7	+UCOMP			
8	OPSVTMOT			
9	-UCOMP			

ELM 3 DC OUTPUT

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	+PSVTMOT		F	
2	OPSVTMOT		F	
3	-PSVTMOT		F	
4	+PSVTMOT		F	
5	OPSVTMOT		F	
6	-PSVTMOT		F	

GRP 8 1.811.770.00
-- <-- <-- CONTINUATION

ELM 4 GROUND CONNECTION P05

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	GND	0	Y	

ELM 5 WIRE FIELD TO FUSES GRP09, ELM05/06

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	ACPMW-D1	5	U	
2	ACPMW-D2	1	U	
3	ACPMW-B2	3	U	
4	ACPMW-A2	3	U	

ELM 6 WIRE FIELD, FROM RECTIFIERS

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	+PSVTMOT	2	U	
2	OPSVTMOT	0	U	
3	-PSVTMOT	6	U	
4	OPSVTMOT	4	U	

ELM 7 WIRE FIELD, TO RECTIFIERS

PNT	SIGNAL NAME	COLOR	LV	TYPE F
1	ACPMW-F1	4	U	
2	ACPMW-E1	4	U	
3	ACPMW-F2	9	U	
4	ACPMW-E2	9	U	

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 9 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 9

ELM 1

RECTIFIER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ACPWM-E2	9	L		
2	ACPWM-F2	9	L		
3	OPSVTMOT	4	L		
4	-PSVTMOT	6	L		

ELM 2

RECTIFIER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ACPWM-E1	4	L		
2	ACPWM-F1	4	L		
3	+PSVTMOT	2	L		
4	OPSVTMOT	0	L		

ELM 3

CAPACITOR

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+PSVTMOT	2	L		
2	OPSVTMOT	0	L		

ELM 4

CAPACITOR

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	OPSVTMOT	4	L		
2	-PSVTMOT	6	L		

ELM 5

FUSE, POSITIVE MOTOR SUPPLY

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ACPWM-B2	7	L		
2	ACPWM-D1	5	L		

GRP 9

<-- <-- <-- CONTINUATION

ELM 6

FUSE, NEGATIVE MOTOR SUPPLY

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ACPWM-A1	3	L		
2	ACPWM-D2	1	L		

GRP 10

1.811.799.00

FAN CONNECTION BOARD

ELM 1

1.811.510.81 + 82 ONLY

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2					
3					
4					
5	+ FAN	2	L		
6	+ 0.0	6	L		
7	+ 0.0	0	U		
8	+15.0	4	U		

ELM 2

1.811.510.81 + 82 ONLY

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2					
3	+ 0.0	0	M		
4					
5					
6					
7					
8					
9					
10					
11					
12	+15.0	0	M		

ELM 3

1.811.510.83

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7	L		
2					
3					
4	+ 0.0	2	L		
5					
6					
7	+ FAN	6	Y		
8	+ 0.0	2	Y		

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 10 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 11

SUPPLY CABLE, SP. MOT. DRIVE AMP.

ELM 1

FROM GRP08, ELM02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+PSVTMOT	2	M		
2	OPSVTMOT	0	M		
3	-PSVTMOT	6	M		
4	+PSVTMOT	2	M		
5	OPSVTMOT	0	M		
6	-PSVTMOT	6	M		

ELM 2

TO GRP31, ELM01 (DRIVE AMP. LEFT)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2	GND	0	F		
3					
4	+PSVTMOT	2	F		
5	OPSVTMOT	0	F		
6	-PSVTMOT	6	F		

ELM 3

TO GRP32, ELM01 (DRIVE AMP. RIGHT)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2	GND	0	F		
3					
4	+PSVTMOT	2	F		
5	OPSVTMOT	0	F		
6	-PSVTMOT	6	F		

GRP 12

SUPPLY CABLE, SPOOLING MOTOR, LEFT

ELM 1

FROM GRP31, ELM03 (DRIVE AMP. LEFT)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2					
3					
4	AN-R-L	1	M		
5	AN-S-L	0	M		
6	AN-T-L	7	M		

ELM 2

TO SPOOLING MOTOR, LEFT (GRP87)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2	GND	0	F		
3					
4	AN-T-L	7	F		
5	AN-S-L	0	F		
6	AN-R-L	1	F		

ELM 3

GROUND CONNECTION

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	GND	0	L		
2	GND	0	L		

GRP 13

SUPPLY CABLE, SPOOLING MOTOR, RIGHT

ELM 1

FROM GRP32, ELM03 (DRIVE AMP. RIGHT)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2					
3					
4	AN-R-R	5	M		
5	AN-S-R	0	M		
6	AN-T-R	8	M		

ELM 2

TO SPOOLING MOTOR, RIGHT (GRP88)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2	GND	0	F		
3					
4	AN-R-R	5	F		
5	AN-S-R	0	F		
6	AN-T-R	8	F		

STUDER A812

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* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 15 *
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* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION
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GRP 20 1.811.700.00
<-- <-- <-- CONTINUATION

ELM 20 1.811.898.00
WIRE FIELD, TO CONN. GRP20, ELM65/66

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 5.6	3		U	
2	+ 5.6	3		U	
3	T-PWRUN	5		U	
4	+ 0.0	0		U	
5	+ 0.0	0		U	
6	+ 0.0	0		U	
7	+ 0.0	0		U	
8	+ 0.0	0		U	
9	-15.0	6		U	
10	-15.0	6		U	
11	T-SUPVON	9		U	
12	+ 0.0	0		U	
13	+ 0.0				
14	+15.0	2		U	
15	+15.0	2		U	
16	+24.0	7		U	
17	-24.0				
18	+26.0				

ELM 21 1.811.898.00
WIRE FIELD, TO CONN. GRP20, ELM67

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	5		U	
2	OCAPMOT	4		U	
3	OCAPMOT	6		U	
4	+CAPMOT	2		U	
5	+CAPMOT	9		U	

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GRP 20 1.811.700.00
<-- <-- <-- CONTINUATION

ELM 25 WIRE FIELD, TC HEADS + TC IN/OUT

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ERAHL-TC	6		U	
2	ERAHH-TC	0		U	
3	+ 0.0	5		U	
4	RECHL-TC	6		U	
5	RECHH-TC	9		U	
6	+ 0.0	5		U	
7	REPHL-TC	6		U	
8	REPHH-TC	9		U	
9	+ 0.0	5		U	
10	LINFH-TC	6		U	
11	LINFH-TC	9		U	
12	+ 0.0	5		U	
13	LOUFB-TC	6		U	
14	LOUFA-TC	9		U	
15	+ 0.0	5		U	

ELM 26 WIRE FIELD, ERASE HEAD CH 1 + SUPPLY

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 5.6	3		U	
2	ERAHL-01	6		U	
3	ERAHM-01	2		U	
4	ERAHH-01	9		U	
5	ERAHO-01	5		U	

ELM 27 WIRE FIELD, RECORD HEAD CH 1

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	RECHL-01	6		U	
2	RECHH-01	9		U	
3	+ 0.0	5		U	

ELM 28 WIRE FIELD, REPRODUCE PREAMP. CH 1

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	REPRO-01	6		U	
2	REPPE-01	9		U	
3	+ 0.0	5		U	

GRP 20 1.811.700.00
<-- <-- <-- CONTINUATION

ELM 29 WIRE FIELD, IN/OUT CH 1 + SUPPLY

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	LOUFB-01	6		U	
2	LOUFA-01	0		U	
3	+ 0.0	5		U	
4	LINFH-01	6		U	
5	LINFH-01	0		U	
6	+ 0.0	5		U	
7	+15.0	2		U	

ELM 30 WIRE FIELD, SUPPLY

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	0		U	
2	-15.0	6		U	

ELM 31 WIRE FIELD, ERASE HEAD CH 2

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ERACS-02	7		U	
2	ERAHL-02	6		U	
3	ERAHM-02	2		U	
4	ERAHH-02	9		U	
5	ERAHO-02	5		U	

ELM 32 WIRE FIELD, RECORD HEAD CH 2

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	RECHL-02	6		U	
2	RECHH-02	9		U	
3	+ 0.0	5		U	

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* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 16 *
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* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION
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GRP 20 1.811.700.00
<-- <-- <-- CONTINUATION

ELM 33 WIRE FIELD, REPRODUCE PREAMP. CH 2

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	REPRO-02	6		U	
2	REPPE-02	9		U	
3	+ 0.0	5		U	

ELM 34 WIRE FIELD, IN/OUT CH 2

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	LOUFB-02	6		U	
2	LOUFA-02	0		U	
3	+ 0.0	5		U	
4	LINFH-02	6		U	
5	LINFH-02	0		U	
6	+ 0.0	5		U	

ELM 35 PAR. CONT. INT. SYNCHRONIZER P12

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 0.0				
4	+ 5.6				
5	+15.0				
6	-15.0				
7					
8	TC-TCDIR				
9	+ 0.0				
10	TC-TCMV				
11	+ 0.0				
12	T-REFINT				
13	TD-CAPSY				
14	TD-MVDIR				
15	TD-MVCLK				
16	+ 0.0				

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GRP 20 1.811.700.00
<-- <-- <-- CONTINUATION

ELM 39 TO TAPE DECK GRP27, ELM02 P13

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	TC-SL3				
2	+ 0.0				
3	TC-SL4				
4	+ 0.0				
5	TC-IRQ				
6	+ 0.0				
7	TC-ENBG				
8	+ 0.0				
9	TC-RESMP				
10	+ 0.0				
11	TC-SL1				
12	+ 0.0				
13	TD-CRES				
14	+ 0.0				
15	TC-RW				
16	+ 0.0				
17	TC-ENB				
18	+ 0.0				
19	TC-ADR2				
20	+ 0.0				
21	TC-ADR1				
22	+ 0.0				
23	TC-ADRO				
24	+ 0.0				
25	TC-DATA7				
26	+ 0.0				
27	TC-DATA6				
28	+ 0.0				
29	TC-DATA5				
30	+ 0.0				
31	TC-DATA4				
32	+ 0.0				
33	TC-DATA3				
34	+ 0.0				
35	TC-DATA2				
36	+ 0.0				
37	TC-DATA1				
38	+ 0.0				
39	TC-DATA0				
40	+ 0.0				

GRP 20 1.811.700.00
<-- <-- <-- CONTINUATION

ELM 40 OPTION INT. SYNCHRONIZER P14

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	TC-SL3				
2	+ 0.0				
3	TC-SL4				
4	+ 0.0				
5	TC-IRQ				
6	+ 0.0				
7	TC-ENBG				
8	+ 0.0				
9	TC-RESMP				
10	+ 0.0				
11	TC-SL1				
12	+ 0.0				
13	TD-CRES				
14	+ 0.0				
15	TC-RW				
16	+ 0.0				
17	TC-ENB				
18	+ 0.0				
19	TC-ADR2				
20	+ 0.0				
21	TC-ADR1				
22	+ 0.0				
23	TC-ADRO				
24	+ 0.0				
25	TC-DATA7				
26	+ 0.0				
27	TC-DATA6				
28	+ 0.0				
29	TC-DATA5				
30	+ 0.0				
31	TC-DATA4				
32	+ 0.0				
33	TC-DATA3				
34	+ 0.0				
35	TC-DATA2				
36	+ 0.0				
37	TC-DATA1				
38	+ 0.0				
39	TC-DATA0				
40	+ 0.0				

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* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 17 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 41 1.811.775.00
 CAPSTAN MOTDR INTERFACE J05

PNT SIGNAL NAME COLOR LV TYPE F

```
1 TC-TCDIR
2 TC-TCMV
3 T-REFINT
4 TC-TCMVI
5 TC-CDIRI
6 TD-TCM1
7 TD-TCM2
8 TC-REF
9 TC-INEX
10 TC-RESMP
11 TC-ENB8
12 T-REFEXT
13 TC-IRQ
14 TC-EREF
15 TA-AUIR
16 AN-CSPDC
17
18 +15.0
19 KEY
20 + 5.6
21 + 0.0
22 -15.0
23 TC-SL2
24 TC-SL1
25 TC-REFP
26
27 TC-RW
28 TC-ENB
29 TC-ADR2
30 TC-ADR1
31 TC-ADRO
32 TC-DATA7
33 TC-DATA6
34 TC-DATA5
35 TC-DATA4
36 TC-DATA3
37 TC-DATA2
38 TC-DATA1
39 TC-DATA0
```

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GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 42 1.820.764.00
 CAPSTAN CONTROL UNIT J06

PNT SIGNAL NAME COLOR LV TYPE F

```
1 TD-TCM1
2 TD-TCM2
3 TC-REFP
4 TC-CAPDC
5 TC-TCMVI
6 TC-CDIRI
7 TD-CAPSY
8 TC-REF
9 TC-INEX
10 TC-RESMP
11 TC-ENB8
12 TA-AUIR
13 TC-IRQ
14 TC-EREF
15 TC-SL4
16 TC-SL3
17
18 +15.0
19 KEY
20 + 5.6
21 + 0.0
22 -15.0
23 TC-SL2
24 TC-SL1
25
26 TD-CRES
27 TC-RW
28 TC-ENB
29 TC-ADR2
30 TC-ADR1
31 TC-ADRO
32 TC-DATA7
33 TC-DATA6
34 TC-DATA5
35 TC-DATA4
36 TC-DATA3
37 TC-DATA2
38 TC-DATA1
39 TC-DATA0
```

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GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 43 1.820.753.00
 MASTER SERIAL INTERFACE J07

PNT SIGNAL NAME COLOR LV TYPE F

```
1A TM-DSL4
1B TM-ISL4
2A TM-DSL5
2B TM-ISL5
3A TM-DRES
3B TM-IRES
4A TM-DRW
4B TM-IRW
5A TM-DENB
5B TM-IENB
6A TM-DADR2
6B TM-IADR2
7A TM-DADR1
7B TM-IADR1
8A TM-DADRO
8B TM-IADRO
9A TM-SL4
9B TM-SL5
10A TDS-RX
10B TDS-TX
11A TDS-DTR
11B TDS-CTS
12A SYS-RX
12B SYS-TX
13A SYS-DTR
13B SYS-CTS
14A TM-SHIR
14B TM-KBIR
15A +15.0
15B +15.0
16A + 5.6
16B + 5.6
17A + 0.0
17B + 0.0
18A -15.0
18B -15.0
19A TDS-CLK
19B TM-REIR
20A TD-HEACT
20B TM-SEIR
21A TD-HOVB
21B TA-AUIR
22A TD-CAPSY
22B TM-SL2
23A TM-RESMP
23B TM-ADR3
24A TM-RES
```

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* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 18 *
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* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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GRP 20 1.811.700.00
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ELM 43 1.820.753.00
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PNT SIGNAL NAME COLOR LV TYPE F

```
24B TM-IRQ
25A TD-MVDIR
25B TD-MVCLK
26A TM-RESET
26B TM-RW
27A TM-ENB
27B TM-ADR2
28A TM-ADR1
28B TM-ADRO
29A TM-DATA7
29B TM-DATA6
30A TM-DATA5
30B TM-DATA4
31A TM-DATA3
31B TM-DATA2
32A TM-DATA1
32B TM-DATA0
```

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GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 44 1.811.786.00
 MP-UNIT MASTER J08

PNT SIGNAL NAME COLOR LV TYPE F

```
1 TD-EVENT
2 T-SUPVON
3 TM-SL3
4 TM-SL2
5 TM-RESMP
6 TM-ADR3
7 TM-C614K
8 TM-BUSSW
9 TM-NMI
10 TM-RX
11 TM-TX
12 TM-DREN8
13 TM-IRQ
14 T-PWRON
15 TM-SL7
16 TM-C76K
17 TM-C5600
18 +15.0
19 KEY
20 + 5.6
21 + 0.0
22 TM-C307K
23 TM-SL4
24 TM-SL5
25 TM-SL6
26 TM-RESET
27 TM-RW
28 TM-ENB
29 TM-ADR2
30 TM-ADR1
31 TM-ADRO
32 TM-DATA7
33 TM-DATA6
34 TM-DATA5
35 TM-DATA4
36 TM-DATA3
37 TM-DATA2
38 TM-DATA1
39 TM-DATA0
```

GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 45 1.820.751.00
 SMPTE/EBU INTERFACE J09

PNT SIGNAL NAME COLOR LV TYPE F

```
1 FRMGND
2 TRANSCM
3 TRANSA
4 TRANSB
5 RECEIVB
6 RECEIVA
7 RECEIVCM
8 FRMGND
9 RCV-232
10 TM-RX
11 TM-TX
12 TM-DREN8
13 TM-SEIR
14 SND-232
15 TM-BUSSW
16 TM-SL3
17 TM-ADR3
18 +15.0
19 KEY
20 + 5.6
21 + 0.0
22 -15.0
23 TM-SL4
24 TM-SL5
25 TM-SL6
26 TM-RES
27 TM-RW
28 TM-ENB
29 TM-ADR2
30 TM-ADR1
31 TM-ADRO
32 TM-DATA7
33 TM-DATA6
34 TM-DATA5
35 TM-DATA4
36 TM-DATA3
37 TM-DATA2
38 TM-DATA1
39 TM-DATA0
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STUDER A812

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*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 19 *
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* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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GRP 20 1.811.700.00
CONTINUATION

ELM 46 1.820.728.00
MASTER PERIPHERY CONTR. J10

PNT SIGNAL NAME COLOR LV TYPE F

1A T-SADA
1B T-SADB
2A T-SADC
2B T-READSL
3A T-WRTSL
3B T-DT-CH1
4A T-DT-CH2
4B T-DT-CH3
5A T-DT-MP
5B T-DT-RP1
6A T-DT-RP2
6B TA-AC TMD
7A T-DT-SJM
7B TA-ACTO1
8A T-DT-RES
8B TA-ACTTC
9A
9B TA-ACTO2
10A
10B
11A TA-AUIR
11B CA-CHSTC
12A
12B CA-CHS01
13A
13B CA-MONO
14A TM-SL6
14B CA-CHS02
15A +15.0
15B +15.0
16A + 0.0
16B + 0.0
17A -15.0
17B -15.0
18A + 5.6
18B + 5.6
19A TM-RES
19B TM-C307K
20A TM-RW
20B CA-SAFE
21A TM-ENB
21B CA-ADR-R
22A TM-ADR2
22B CA-ADR-S
23A TM-ADR1
23B CA-ADR-T
24A TM-ADRO

GRP 20 1.811.700.00
CONTINUATION

ELM 46 1.820.728.00
CONTINUATION

PNT SIGNAL NAME COLOR LV TYPE F

24B CA-ADR-U
25A TM-DATA7
25B CA-DATA0
26A TM-DATA6
26B CA-DATA1
27A TM-DATA5
27B CA-DATA2
28A TM-DATA4
28B CA-DATA3
29A TM-DATA3
29B CA-DATA4
30A TM-DATA2
30B CA-DATA5
31A TM-DATA1
31B CA-DATA6
32A TM-DATA0
32B CA-DATA7

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GRP 20 1.811.700.00
CONTINUATION

ELM 47 1.820.721.81
TIME CODE WRITE/READ UNIT J11

PNT SIGNAL NAME COLOR LV TYPE F

1 T-TCINDL
2 T-TCOUDL
3 + 0.0
4 ERAHH-TC
5 ERAHL-TC
6 + 0.0
7 RECHH-TC
8 RECHL-TC
9 + 0.0
10 REPHH-TC
11 REPHL-TC
12
13
14 T-TCPRES
15 LINFA-TC
16 LINFB-TC
17 LOUFA-TC
18 LOUFB-TC
19 KEY
20 TA-ACTTC
21 + 0.0
22 +15.0
23 -15.0
24 + 5.6
25 TM-C307K
26 CA-SAFE
27 CA-ADR-R
28 CA-ADR-S
29 CA-ADR-T
30 CA-ADR-U
31 CA-DATA0
32 CA-DATA1
33 CA-DATA2
34 CA-DATA3
35 CA-DATA4
36 CA-DATA5
37 CA-DATA6
38 CA-DATA7
39 CA-CHSTC

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*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 20 *
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* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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GRP 20 1.811.700.00
CONTINUATION

ELM 49 1.820.722.81
TIME CODE DELAY UNIT J12

PNT SIGNAL NAME COLOR LV TYPE F

1 T-TCINDL
2 T-TCOUDL
3 + 0.0
4 TD-MVDIR
5 + 0.0
6 TD-MVCLK
7 + 0.0
8 + 0.0
9 + 0.0
10
11
12
13
14 T-TCPRES
15
16
17
18
19 KEY
20 TA-ACTTC
21 + 0.0
22 +15.0
23 -15.0
24 + 5.6
25 TM-C307K
26 CA-SAFE
27 CA-ADR-R
28 CA-ADR-S
29 CA-ADR-T
30 CA-ADR-U
31 CA-DATA0
32 CA-DATA1
33 CA-DATA2
34 CA-DATA3
35 CA-DATA4
36 CA-DATA5
37 CA-DATA6
38 CA-DATA7
39 CA-CHSTC

GRP 20 1.811.700.00
CONTINUATION

ELM 49 1.820.713.00
HF-DRIVER, CH 1 J13

PNT SIGNAL NAME COLOR LV TYPE F

1 BIAFB-01
2 K-REC-01
3 + 0.0
4 + 0.0
5 BIASA-01
6 BIASB-01
7 BIASC-01
8
9 ERACS-01
10 AFCSW-01
11 + 0.0
12 ERAHL-01
13 ERAHM-01
14 ERAHH-01
15 ERAHO-01
16 + 0.0
17 CA-BAD01
18 CA-RSW01
19 KEY
20 TA-ACTO1
21 + 0.0
22 +15.0
23 -15.0
24 + 5.6
25 TM-C307K
26 CA-SAFE
27 CA-ADR-R
28 CA-ADR-S
29 CA-ADR-T
30 CA-ADR-U
31 CA-DATA0
32 CA-DATA1
33 CA-DATA2
34 CA-DATA3
35 CA-DATA4
36 CA-DATA5
37 CA-DATA6
38 CA-DATA7
39 CA-CHS01

GRP 20 1.811.700.00
CONTINUATION

ELM 50 1.820.712.81
RECORD AMPLIFIER, CH 1 J14

PNT SIGNAL NAME COLOR LV TYPE F

1 RECIN-01
2 EQUAL-01
3 BIAFB-01
4 K-REC-01
5 + 0.0
6 BIASA-01
7 BIASB-01
8 BIASC-01
9 RECHL-01
10 RECHH-01
11 + 0.0
12 SYNHL-01
13 SYNHH-01
14 + 0.0
15 AFCSW-01
16 + 0.0
17 CA-BAD01
18 CA-RSW01
19 KEY
20 TA-ACTO1
21 + 0.0
22 +15.0
23 -15.0
24 + 5.6
25 TM-C307K
26 CA-SAFE
27 CA-ADR-R
28 CA-ADR-S
29 CA-ADR-T
30 CA-ADR-U
31 CA-DATA0
32 CA-DATA1
33 CA-DATA2
34 CA-DATA3
35 CA-DATA4
36 CA-DATA5
37 CA-DATA6
38 CA-DATA7
39 CA-CHS01

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 21 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

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GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 51 1.820.710.81
 REPRODUCE AMPLIFIER, CH 1 J15

PNT SIGNAL NAME COLOR LV TYPE F

1 TAPLI-01
 2 EQUAL-01
 3 SYPRE-01
 4 K-REC-01
 5 + 0.0
 6 REPRE-01
 7 REPRO-01
 8 + 0.0
 9 + 0.0
 10 TAPDI-01
 11 + 0.0
 12 SYNHL-01
 13 SYNHH-01
 14 + 0.0
 15 CA-EQL01
 16 CA-SYN01
 17 CA-LSW01
 18 + 0.0
 19 KEY
 20 TA-ACT01
 21 + 0.0
 22 +15.0
 23 -15.0
 24 + 5.6
 25 TM-C307K
 26 CA-SAFE
 27 CA-ADR-R
 28 CA-ADR-S
 29 CA-ADR-T
 30 CA-ADR-U
 31 CA-DATA0
 32 CA-DATA1
 33 CA-DATA2
 34 CA-DATA3
 35 CA-DATA4
 36 CA-DATA5
 37 CA-DATA6
 38 CA-DATA7
 39 CA-CHS01

GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 52 1.820.714.81
 LINE AMPLIFIER, CH 1 J16

PNT SIGNAL NAME COLOR LV TYPE F

1 MONIT-01
 2 + 0.0
 3 LOUFA-01
 4 LOUFB-01
 5 + 0.0
 6 INPDI-01
 7 INPAD-01
 8 RECIN-01
 9 + 0.0
 10 TAPAD-01
 11 TAPMS-01
 12 TAPDI-01
 13 + 0.0
 14 LINFA-01
 15 LINFB-01
 16 CA-EQL01
 17 CA-SYN01
 18 CA-LSW01
 19 KEY
 20 TA-ACT01
 21 + 0.0
 22 +15.0
 23 -15.0
 24 + 5.6
 25 TM-C307K
 26 CA-SAFE
 27 CA-ADR-R
 28 CA-ADR-S
 29 CA-ADR-T
 30 CA-ADR-U
 31 CA-DATA0
 32 CA-DATA1
 33 CA-DATA2
 34 CA-DATA3
 35 CA-DATA4
 36 CA-DATA5
 37 CA-DATA6
 38 CA-DATA7
 39 CA-CHS01

GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 53 1.820.720.00
 MONO-STEREO-SWITCH J17

PNT SIGNAL NAME COLOR LV TYPE F

1 INPAD-01
 2 + 0.0
 3 INPAD-02
 4 + 0.0
 5 TAPMS-02
 6 + 0.0
 7 TAPMS-01
 8 + 0.0
 9 TAPDI-01
 10 + 0.0
 11 TAPDI-02
 12 + 0.0
 13 RECIN-02
 14 + 0.0
 15 RECIN-01
 16
 17
 18
 19 KEY
 20 TA-ACTMD
 21 + 0.0
 22 +15.0
 23 -15.0
 24 + 5.6
 25 TM-C307K
 26 CA-SAFE
 27 CA-ADR-R
 28 CA-ADR-S
 29 CA-ADR-T
 30 CA-ADR-U
 31 CA-DATA0
 32 CA-DATA1
 33 CA-DATA2
 34 CA-DATA3
 35 CA-DATA4
 36 CA-DATA5
 37 CA-DATA6
 38 CA-DATA7
 39 CA-MONO

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 22 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

<-- <-- <-- CONTINUATION

GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 54 1.820.713.00
 HF-DRIVER, CH 2 J18

PNT SIGNAL NAME COLOR LV TYPE F

1 8IAFB-02
 2 K-REC-02
 3 + 0.0
 4 + 0.0
 5 8IASA-02
 6 8IASB-02
 7 8IASC-02
 8
 9 ERACS-02
 10 AFCSW-02
 11 + 0.0
 12 ERAHL-02
 13 ERAHM-02
 14 ERAHH-02
 15 ERAHD-02
 16 + 0.0
 17 CA-BAD02
 18 CA-RSM02
 19 KEY
 20 TA-ACT02
 21 + 0.0
 22 +15.0
 23 -15.0
 24 + 5.6
 25 TM-C307K
 26 CA-SAFE
 27 CA-ADR-R
 28 CA-ADR-S
 29 CA-ADR-T
 30 CA-ADR-U
 31 CA-DATA0
 32 CA-DATA1
 33 CA-DATA2
 34 CA-DATA3
 35 CA-DATA4
 36 CA-DATA5
 37 CA-DATA6
 38 CA-DATA7
 39 CA-CHS02

GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 55 1.820.712.81
 RECORD AMPLIFIER, CH 2 J19

PNT SIGNAL NAME COLOR LV TYPE F

1 RECIN-02
 2 EQUAL-02
 3 8IAFB-02
 4 K-REC-02
 5 + 0.0
 6 8IASA-02
 7 8IASB-02
 8 8IASC-02
 9 RECHL-02
 10 RECHH-02
 11 + 0.0
 12 SYNHL-02
 13 SYNHH-02
 14 + 0.0
 15 AFCSW-02
 16 + 0.0
 17 CA-BAD02
 18 CA-RSM02
 19 KEY
 20 TA-ACT02
 21 + 0.0
 22 +15.0
 23 -15.0
 24 + 5.6
 25 TM-C307K
 26 CA-SAFE
 27 CA-ADR-R
 28 CA-ADR-S
 29 CA-ADR-T
 30 CA-ADR-U
 31 CA-DATA0
 32 CA-DATA1
 33 CA-DATA2
 34 CA-DATA3
 35 CA-DATA4
 36 CA-DATA5
 37 CA-DATA6
 38 CA-DATA7
 39 CA-CHS02

GRP 20 1.811.700.00
 <-- <-- <-- CONTINUATION

ELM 56 1.820.710.81
 REPRODUCE AMPLIFIER, CH 2 J20

PNT SIGNAL NAME COLOR LV TYPE F

1 TAPLI-02
 2 EQUAL-02
 3 SYPRE-02
 4 K-REC-02
 5 + 0.0
 6 REPRE-02
 7 REPRO-02
 8 + 0.0
 9 + 0.0
 10 TAPDI-02
 11 + 0.0
 12 SYNHL-02
 13 SYNHH-02
 14 + 0.0
 15 CA-EQL02
 16 CA-SYN02
 17 CA-LSW02
 18 + 0.0
 19 KEY
 20 TA-ACT02
 21 + 0.0
 22 +15.0
 23 -15.0
 24 + 5.6
 25 TM-C307K
 26 CA-SAFE
 27 CA-ADR-R
 28 CA-ADR-S
 29 CA-ADR-T
 30 CA-ADR-U
 31 CA-DATA0
 32 CA-DATA1
 33 CA-DATA2
 34 CA-DATA3
 35 CA-DATA4
 36 CA-DATA5
 37 CA-DATA6
 38 CA-DATA7
 39 CA-CHS02

STUDER A812

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*****
* WILLI STUDER AG * L O C A T I O N P I N N L I S T * 89/09/18 * 12:22 * P A G E 23 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION
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GRP 20 1.811.700.00
CONTINUATION

ELM 57 1.820.714.81
LINE AMPLIFIER, CH 2 J21

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	MONIT-02				
2	+ 0.0				
3	LDJFA-02				
4	LDJFB-02				
5	+ 0.0				
6	INPDI-02				
7	INPAD-02				
8	RECIN-02				
9	+ 0.0				
10	TAPAD-02				
11	TAPMS-02				
12	TAPDI-02				
13	+ 0.0				
14	LINF4-02				
15	LINF8-02				
16	CA-EJL02				
17	CA-SYN02				
18	CA-LSW02				
19	KEY				
20	TA-ACT02				
21	+ 0.0				
22	+15.0				
23	-15.0				
24	+ 5.6				
25	TM-C307K				
26	CA-SAFE				
27	CA-ADR-R				
28	CA-ADR-S				
29	CA-ADR-T				
30	CA-ADR-U				
31	CA-DATA0				
32	CA-DATA1				
33	CA-DATA2				
34	CA-DATA3				
35	CA-DATA4				
36	CA-DATA5				
37	CA-DATA6				
38	CA-DATA7				
39	CA-CHS02				

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GRP 20 1.811.700.00
CONTINUATION

ELM 65
CONNECTOR TO GRP25, ELM01 P15

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	K-PRESSB	2	F		
2	K-BRAKE	1	F		
3	+24.0	7	F		
4	+ 0.0	0	F		
5	K-PRESSA	3	F		
6	+24.0	7	F		
7	+24.0	7	F		
8	+ 0.0	0	F		
9	K-LIFT	4	F		
10	+24.0	7	F		
11	+24.0	7	F		
12	+ 0.0	0	F		
13	K-TTSR	5	F		
14	+24.0	7	F		
15	+24.0	7	F		
16	-15.0	6	F		
17	K-TTSL	6	F		
18	+24.0	7	F		
19	+24.0	7	F		
20	+15.0	2	F		
21	K-EDIT	9	F		
22	K-STOBY	8	F		
23					
24	+ 5.6	3	F		

ELM 66
CONNECTOR TO GRP27, ELM04 P16

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+15.0	2	F		
2	+ 0.0	0	F		
3	-15.0	6	F		
4	+ 5.6	3	F		
5	+ 0.0	0	F		
6	T-PWRON	5	F		
7					
8					
9	T-SUPVON	9	F		
10					
11	+ 0.0	0	F		
12					

GRP 20 1.811.700.00
CONTINUATION

ELM 67 1.811.898.00
CONNECTOR TO GRP85, ELM03 P17

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	OCAPMOT	4	F		
2					
3	+CAPMOT	9	F		
4	OCAPMOT	6	F		
5	+ 0.0	5	F		
6	+CAPMOT	2	F		

ELM 68 1.811.898.00
TO GRP80, ELM01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7	X		
2	K-LIFT	4	X		

ELM 69 1.811.898.00
TO GRP81, ELM01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7	X		
2	K-PRESSA	3	X		

ELM 70 1.811.898.00
TO GRP81, ELM02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7	X		
2	K-PRESSB	2	X		

ELM 71 1.811.898.00
TO GRP81, ELM03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7	X		
2	K-STOBY	8	X		

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*****
* WILLI STUDER AG * L O C A T I O N P I N N L I S T * 89/09/18 * 12:22 * P A G E 24 *
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* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION
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GRP 20 1.811.700.00
CONTINUATION

ELM 72 1.811.898.00
TO GRP82, ELM05

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7	X		
2	K-TTSL	6	X		

ELM 73 1.811.898.00
TO GRP83, ELM05

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7	X		
2	K-TTSR	5	X		

ELM 74 1.811.898.00
TO GRP86, ELM01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7	X		
2	K-BRAKE	1	X		

ELM 75 1.811.898.00
TO GRP86, ELM02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7	X		
2	K-EDIT	9	X		

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GRP 20 1.811.700.00
CONTINUATION

ELM 80
CONN. HEAD BLOCK ASSEMBLY

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11	+ 0.0	0	B		
12	+ 5.6	3	B		
13	+15.0	2	B		
14	-15.0	6	B		
15					
16					
17					
18					
19					
20					
21	ERAHO-02	5	B		
22	ERAHH-02	9	B		
23	ERAHL-02	6	B		
24	ERAHM-02	2	B		
25	ERAHH-TC	0	B		
26	RECHH-TC	9	B		
27	REPHH-TC	9	B		
28					
29	RECHL-02	6	B		
30	RECHH-02	9	B		
31	+ 0.0	5	B		
32	REPRO-02	6	B		
33	REPRE-02	9	B		
34					
35					
36					
37	ERAHO-01	5	B		
38	ERAHH-01	9	B		
39	ERAHL-01	6	B		
40	ERAHM-01	2	B		
41	ERAHL-TC	6	B		
42	RECHL-TC	6	B		
43	REPHL-TC	6	B		
44	+ 0.0	5	B		
45	ERACS-02	7	B		
46	RECHL-01	6	B		
47	RECHH-01	9	B		

GRP 20 1.811.700.00
CONTINUATION

ELM 80
CONTINUATION

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
48	+ 0.0	5	B		
49	REPRO-01	6	B		
50	REPRE-01	9	B		

ELM 90
RC-FILTER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	T-TCINDL				
2	T-TC/RCL				

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 24 1.811.772.00
 SPOOLING MOTOR CONTROLLER

ELM 1
 TO GRP31, ELM02 P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 DCPHT-L
 4 DCPHR-L
 5 +15.0
 6 PENB-L
 7 SIN1-L
 8 0.0VREF
 9 SIN2-L
 10 0.0VREF

 ELM 2
 TO GRP32, ELM02 P03
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 DCPHT-R
 4 DCPHR-R
 5 +15.0
 6 PENB-R
 7 SIN1-R
 8 0.0VREF
 9 SIN2-R
 10 0.0VREF

 ./.

GRP 24 1.811.772.00
 <-- <-- <-- CONTINUATION

ELM 3
 FROM GRP26, ELM02 P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +15.0
 6 +15.0
 7 -15.0
 8 -15.0
 9 TD-PENB
 10 TD-PAVS
 11 TD-76K8
 12
 13 TD-MFL
 14
 15 TD-MFR
 16 TD-RES
 17 TD-DIRL
 18 TD-INF
 19 TD-DIRR
 20 TD-24VSC
 21 AN-VML
 23 AN-VMR
 24 AN-TTR
 25 TD-SCK
 26 AN-TTL
 59

 ./.

GRP 25 1.811.779.00
 TAPE DECK PERIPHERY DRIVER

ELM 1
 SUPPLY + SOLENOIDS P07
 PNT SIGNAL NAME COLOR LV TYPE F
 1 K-PRESSB M
 2 K-BRAKE M
 3 +24.0 M
 4 + 0.0 M
 5 K-PRESSA M
 6 +24.0 M
 7 +24.0 M
 8 + 0.0 M
 9 K-LIFT M
 10 +24.0 M
 11 +24.0 M
 12 + 0.0 M
 13 K-TTSR M
 14 +24.0 M
 15 +24.0 M
 16 -15.0 M
 17 K-TTSL M
 18 +24.0 M
 19 +24.0 M
 20 +15.0 M
 21 K-EDIT M
 22 K-STDBY M
 23
 24 + 5.6 M

 ELM 2
 FROM GRP08, ELM03 J02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 -UCOMP
 2 Y-TSENS1
 3 +UCOMP
 4 Y-TSENS2
 5 OPSVTMDT
 6 KEY

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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 26 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 25 1.811.779.00
 <-- <-- <-- CONTINUATION

ELM 3
 TAPE TRANSPARENT P08
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +15.0
 6 -15.0
 7 TD-YTRSP
 8
 9 TD-TRSP
 10 TD-TRSPR

 ELM 4
 USER P06
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +15.0
 6 -15.0
 7 + 0.0
 8 TD-MVCLK
 9 + 0.0
 10 TD-MVDIR
 11
 12 TD-YTRSP
 13 TD-TRSP
 14 TD-TRSPR
 15 +24.0
 16 +24.0

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GRP 25 1.811.779.00
 <-- <-- <-- CONTINUATION

ELM 5
 TAPE TENSION SENSOR, LEFT P04
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +15.0
 6 -15.0
 7 T-WCLK1L
 8 T-WCLK2L
 9
 10
 11 AN-TTL
 12 T-TENDL
 13 T-CLK1
 14 T-CLK2
 15 T-POS1
 16 T-POS2

 ELM 6
 TAPE TENSION SENSOR, RIGHT P03
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +15.0
 6 -15.0
 7 T-WCLK1R
 8 T-WCLK2R
 9
 10
 11 AN-TTR
 12 T-TENDR
 13 T-CLK1
 14 T-CLK2
 15 T-POS1
 16 T-POS2

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GRP 25 1.811.779.00
 <-- <-- <-- CONTINUATION

ELM 7
 FROM GRP26, ELM01 P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +15.0
 6 +15.0
 7 -15.0
 8 -15.0
 9 TD-DATA7
 10 TD-DATA6
 11 TD-DATA5
 12 TD-DATA4
 13 TD-DATA3
 14 TD-DATA2
 15 TD-DATA1
 16 TD-DATA0
 17 TD-ADRO
 18 TD-ADRI
 19 TD-ADR2
 20 TD-PAV1
 21 TD-RW
 22 TD-RESET
 23 TD-E
 24 TD-PAV2
 25 TD-ENG
 26 TD-PAV3
 27 TD-MVCLK
 28 TD-SL2
 29 TD-SL1
 30 TD-SLO
 31 TD-IRQ
 32 TD-MVDIR
 33 TD-MVCKS
 34 +10VREF
 35 TD-WCLKR
 36 TD-WDIRR
 37 -10VREF
 38 TD-WCLKL
 39 TD-WDIRL
 40 TD-RESIN

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* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 27 *
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* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION

GRP 25 1.811.779.00
<-- <-- <-- CONTINUATION

ELM 8 FROM GRP 26, ELM02 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	+15.0				
7	-15.0				
8	-15.0				
9	TD-PENB				
10	TD-PAVS				
11	TD-76K8				
12					
13	TD-MFL				
14					
15	TD-MFR				
16	TD-RES				
17	TD-DIRL				
18	TD-INF				
19	TD-DIRL				
20	TD-24VSC				
21	AN-VML				
22					
23	AN-VMR				
24	AN-TTR				
25	TD-SCK				
26	AN-TTL				

GRP 26 1.811.773.00
TAPE DECK PERIPHERY INTERFACE

ELM 1 TO GRP25, ELM07/GRP27, ELM03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0			L	
2	+ 0.0			L	
3	+ 5.6			L	
4	+ 5.6			L	
5	+15.0			L	
6	+15.0			L	
7	-15.0			L	
8	-15.0			L	
9	TD-DATA7			L	
10	TD-DATA6			L	
11	TD-DATA5			L	
12	TD-DATA4			L	
13	TD-DATA3			L	
14	TD-DATA2			L	
15	TD-DATA1			L	
16	TD-DATA0			L	
17	TD-ADRO			L	
18	TD-ADR1			L	
19	TD-ADR2			L	
20	TD-PAV1			L	
21	TD-RW			L	
22	TD-RESET			L	
23	TD-E			L	
24	TD-PAV2			L	
25	TD-ENG			L	
26	TD-PAV3			L	
27	TD-MVCLK			L	
28	TD-SL2			L	
29	TD-SL1			L	
30	TD-SLO			L	
31	TD-IRQ			L	
32	TD-MVDIR			L	
33	TD-MVCKS			L	
34	+10VREF			L	
35	TD-WCLKR			L	
36	TD-WDIRR			L	
37	-10VREF			L	
38	TD-WCLKL			L	
39	TD-WDIRL			L	
40	TD-RESIN			L	

GRP 26 1.811.773.00
<-- <-- <-- CONTINUATION

ELM 2 TO GRP24, ELM03/GRP25, ELM08

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0			L	
2	+ 0.0			L	
3	+ 5.6			L	
4	+ 5.6			L	
5	+15.0			L	
6	+15.0			L	
7	-15.0			L	
8	-15.0			L	
9	TD-PENB			L	
10	TD-PAVS			L	
11	TD-76K8			L	
12				L	
13	TD-MFL			L	
14				L	
15	TD-MFR			L	
16	TD-RES			L	
17	TD-DIRL			L	
18	TD-INF			L	
19	TD-DIRL			L	
20	TD-24VSC			L	
21	AN-VML			L	
22				L	
23	AN-VMR			L	
24	AN-TTR			L	
25	TD-SCK			L	
26	AN-TTL			L	

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* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 28 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION

GRP 27 1.811.774.00
TAPE DECK CONTROLLER

ELM 1 FROM GRP20, ELM03 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	TD-S-CLK				
3	TD-S-CTS				
4	TD-S-RX				
5	TD-S-DTR				
6	TD-S-TX				
7	TD-EVENT				
8	+ 0.0				
9	TD-MVCLK				
10	TD-MVDIR				

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GRP 27 1.811.774.00
<-- <-- <-- CONTINUATION

ELM 2 FROM GRP20, ELM39 P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	TC-SL3				
2	+ 0.0				
3	TC-SL4				
4	+ 0.0				
5	TC-IRQ				
6	+ 0.0				
7	TC-ENBG				
8	+ 0.0				
9	TC-RESMP				
10	+ 0.0				
11	TC-SL1				
12	+ 0.0				
13	TD-CRES				
14	+ 0.0				
15	TC-RW				
16	+ 0.0				
17	TC-ENB				
18	+ 0.0				
19	TC-ADR2				
20	+ 0.0				
21	TC-ADR1				
22	+ 0.0				
23	TC-ADRO				
24	+ 0.0				
25	TC-DATA7				
26	+ 0.0				
27	TC-DATA6				
28	+ 0.0				
29	TC-DATA5				
30	+ 0.0				
31	TC-DATA4				
32	+ 0.0				
33	TC-DATA3				
34	+ 0.0				
35	TC-DATA2				
36	+ 0.0				
37	TC-DATA1				
38	+ 0.0				
39	TC-DATA0				
40	+ 0.0				

GRP 27 1.811.774.00
<-- <-- <-- CONTINUATION

ELM 3 FROM GRP26, ELM01 P03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	+15.0				
7	-15.0				
8	-15.0				
9	TD-DATA7				
10	TD-DATA6				
11	TD-DATA5				
12	TD-DATA4				
13	TD-DATA3				
14	TD-DATA2				
15	TD-DATA1				
16	TD-DATA0				
17	TD-ADRO				
18	TD-ADR1				
19	TD-ADR2				
20	TD-PAV1				
21	TD-RW				
22	TD-RESET				
23	TD-E				
24	TD-PAV2				
25	TD-ENG				
26	TD-PAV3				
27	TD-MVCLK				
28	TD-SL2				
29	TD-SL1				
30	TD-SLO				
31	TD-IRQ				
32	TD-MVDIR				
33	TD-MVCKS				
34	+10VREF				
35	TD-WCLKR				
36	TD-WDIRR				
37	-10VREF				
38	TD-WCLKL				
39	TD-WDIRL				
40	TD-RESIN				

***** WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 29 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 27 1.811.774.00
 <-- <-- <-- CONTINUATION

ELM 4
 SUPPLY (FROM GRP20, ELM20) J01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 +15.0 M
 2 + 0.0 M
 3 -15.0 M
 4 + 5.6 M
 5 + 0.0 M
 6 T-PWRON M
 7
 8 + 0.0
 9 T-SUPVON M
 10
 11 + 0.0 M
 12

ELM 5
 CONNECTOR RS 232 (SERVICE) J02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 TD-TX
 2 -15.0
 3 +15.0
 4 + 0.0
 5 + 5.0
 6 KEY
 7 TD-RX

GRP 30 1.820.790.00
 SWITCHING STABILIZER

ELM 1
 DC INPUT (FROM GRP07, ELM12) J01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 +STABIN F
 2 + 0.0 F
 3 + 0.0 F
 4 +STABIN F
 5 + 0.0 F
 6 -STABIN F
 7 +CAPMOT F
 8
 9 OCAPMOT F
 10 ACPWE-D1 F
 11
 12 ACPWE-B1 F

ELM 2
 OUTPUT (TO GRP20, ELM10) P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 5.6 M
 2 + 5.6 M
 3 +5.6SENS M
 4 TM-C76K M
 5 + 0.0 M
 6 + 0.0 M
 7 T-PWRON M
 8 + 0.0 M
 9 + 0.0 M
 10 + 0.0 M
 11 +15.0 M
 12 -15.0 M
 13 + 0.0 M
 14 + 0.0 M
 15 +24.0 M
 16 +REMSUP M
 17 +STABSNS M
 18 -STABSNS M
 19 -26.0 M
 20 +26.0 M
 21 + 0.0 M
 22 +0.0SENS M
 23 OCAPMOT M
 24 +CAPMOT M

GRP 31 1.811.771.00
 SPOOLING MOTOR DRIVE AMPLIFIER LEFT

ELM 1
 SUPPLY (FROM GRP08, ELM02) J01
 PNT SIGNAL NAME COLOR LV TYPE F
 1
 2 GND M
 3
 4 +PSVTMOT M
 5 OPSVTMOT M
 6 -PSVTMOT M

ELM 2
 FROM GRP24, ELM01 P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 DCPHT-L
 4 DCPHR-L
 5 +15.0
 6 PENB-L
 7 SIN1-L
 8 0.0VREF
 9 SIN2-L
 10 0.0VREF

ELM 3
 TO SPOOLING MOTOR LEFT P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 AN-R-L F
 2 AN-S-L F
 3 AN-T-L F
 4 AN-R-L F
 5 AN-S-L F
 6 AN-T-L F

***** WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 30 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 32 1.811.771.00
 SPOOLING MOTOR DRIVE AMPLIFIER RIGHT

ELM 1
 SUPPLY (FROM GRP08, ELM02) J01
 PNT SIGNAL NAME COLOR LV TYPE F
 1
 2 GND M
 3
 4 +PSVTMOT M
 5 OPSVTMOT M
 6 -PSVTMOT M

ELM 2
 FROM GRP24, ELM02 P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 DCPHT-R
 4 DCPHR-R
 5 +15.0
 6 PENB-R
 7 SIN1-R
 8 0.0VREF
 9 SIN2-R
 10 0.0VREF

ELM 3
 TO SPOOLING MOTOR RIGHT P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 AN-R-R F
 2 AN-S-R F
 3 AN-T-R F
 4 AN-R-R F
 5 AN-S-R F
 6 AN-T-R F

GRP 33 1.820.729.00
 SERIAL REMOTE INTERFACE

ELM 1
 FROM GRP35, ELM01 P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 5.0
 3 +REMSUP
 4 T-RL0
 5 T-RL1
 6 T-SL3
 7 T-A3
 8 T-B0
 9 T-A1
 10 T-A2
 11 T-B3
 12 T-A0
 13 T-B1
 14 T-B2
 15 T-B0
 16 T-SL0
 17 T-SL1
 18 T-RL7
 19 T-RL6
 20 T-DE
 21 T-SL2
 22 T-RL5
 23 T-RL4
 24 T-RESET
 25 T-RL3
 26 T-RL2

ELM 2
 TO GRP34, ELM01 P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 SHIELD
 2
 3
 4 TR-B
 5 TR-A
 6 SIGN.GND
 7 KEY
 8 +REMSUP
 9 + 0.0
 10

GRP 34
 CONN. REMOTE CONTR./SYNCHRONIZER/BUS

ELM 1
 CONN. AUTOLOCATOR, REMOTE TIMER J01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 SHIELD B
 2 B B
 3 TR-A B
 4 KEY B
 5 + 0.0 B
 6 B B
 7 TR-B B
 8 SIGN.GND B
 9 +REMSUP B

ELM 2
 CONNECTOR SYNCHRONIZER J02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0 B
 2 BR-REW B
 3 BR-FORM B
 4 BR-VRSPD B
 5 SR-VRSPD B
 6 SR-REHSL B
 7 OR-MVCLK B
 8 KEY/CDIR B
 9 BR-REC B
 10 OR-MVDIR B
 11 OR-CMCLK B
 12 OR-SYENB B
 13 IR-REFEX B
 14 + 0.0 B
 15 BR-PLAY B
 16 BR-STOP B
 17 SR-LIFT B
 18 SR-MUTE B
 19 SR-REC B
 20 SR-REW B
 21 SR-FORM B
 22 SR-PLAY B
 23 SR-STOP B
 24 KEY B
 25 +24.0REM B

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STUDER A812

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*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 12:22 * P A G E 31 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION
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GRP 34 1.820.738.00
CONTINUATION

ELM 3	CONN. PARALLEL REMOTE CONTROL	J03
PNT	SIGNAL NAME	COLOR LV TYPE F
1	+ 0.0	B
2	BR-REW	B
3	BR-FORM	B
4	BR-VRSPD	B
5	SR-VRSPD	B
6	SR-FADRY	B
7	BR-LOCST	B
8	BR-FADRY	B
9	BR-REC	B
10	SR-RESET	B
11	FAD1	B
12	FAD2	B
13	IR-REFEX	B
14	SR-OLOC	B
15	BR-PLAY	B
16	BR-STOP	B
17	SR-LIFT	B
18	SR-LOCST	B
19	SR-REC	B
20	SR-REW	B
21	SR-FORM	B
22	SR-PLAY	B
23	SR-STOP	B
24	KEY	B
25	+24.0REM	B

GRP 35 1.820.738.00
PARALLEL REMOTE INTERFACE

ELM 1	TO GRP33, ELM01	P01
PNT	SIGNAL NAME	COLOR LV TYPE F
1	+ 0.0	
2	+ 5.0	
3	+REMSUP	
4	T-RL0	
5	T-RL1	
6	T-SL3	
7	T-A3	
8	T-BD	
9	T-A1	
10	T-A2	
11	T-B3	
12	T-A0	
13	T-B1	
14	T-B2	
15	T-B0	
16	T-SL0	
17	T-SL1	
18	T-RL7	
19	T-RL6	
20	T-DE	
21	T-SL2	
22	T-RL5	
23	T-RL4	
24	T-RESET	
25	T-RL3	
26	T-RL2	

GRP 35 1.820.738.00
CONTINUATION

ELM 2	FROM GRP20, ELM05	P02
PNT	SIGNAL NAME	COLOR LV TYPE F
1	+ 0.0	
2	+ 0.0	
3	+ 5.6	
4	+ 5.6	
5	+REMSUP	
6	+REMSUP	
7	TM-DSL5	
8	TM-ISL5	
9	TM-DRES	
10	TM-IRES	
11	TM-DRW	
12	TM-IRW	
13	TM-DENB	
14	TM-IENB	
15	T-REFEXT	
16	0.0 VCU	
17	TC-TCMV	
18	TC-TCDIR	
19	TM-DADRO	
20	TM-IADRO	
21	TM-REMIR	
22	0.0 VCU	
23	TD-MVCLK	
24	TD-MVDIR	
25	TM-DATA7	
26	0.0 VCU	
27	TM-DATA6	
28	0.0 VCU	
29	TM-DATA5	
30	0.0 VCU	
31	TM-DATA4	
32	0.0 VCU	
33	TM-DATA3	
34	0.0 VCU	
35	TM-DATA2	
36	0.0 VCU	
37	TM-DATA1	
38	0.0 VCU	
39	TM-DATA0	
40	0.0 VCU	

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* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 32 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION
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GRP 35 1.820.738.00
CONTINUATION

ELM 3	TO CONNECTOR SYNCHRONIZER	P03
PNT	SIGNAL NAME	COLOR LV TYPE F
1	+ 0.0	
2	+ 0.0	
3	BR-REW	
4	BR-PLAY	
5	BR-FORM	
6	BR-STOP	
7	BR-VRSPD	
8	SR-LIFT	
9	SR-VRSPD	
10	SR-MUTE	
11	SR-REHSL	
12	SR-REC	
13	OR-MVCLK	
14	SR-REW	
15	KEY/CDIR	
16	SR-FORM	
17	BR-REC	
18	SR-PLAY	
19	OR-MVDIR	
20	SR-STOP	
21	OR-CMCLK	
22	KEY	
23	OR-SYENB	
24	+24.0REM	
25	IR-REFEX	
26		

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GRP 35 1.820.738.00
CONTINUATION

ELM 4	TO CONN. PARALLEL REMOTE CONTR.	P04
PNT	SIGNAL NAME	COLOR LV TYPE F
1	+ 0.0	
2	SR-OLOC	
3	BR-REW	
4	BR-PLAY	
5	BR-FORM	
6	BR-STOP	
7	BR-VRSPD	
8	SR-LIFT	
9	SR-VRSPD	
10	SR-LOCST	
11	SR-FADRY	
12	SR-REC	
13	BR-LOCST	
14	SR-REW	
15	BR-FADRY	
16	SR-FORM	
17	BR-REC	
18	SR-PLAY	
19	SR-RESET	
20	SR-STOP	
21	FAD1	
22	KEY	
23	FAD2	
24	+24.0REM	
25	IR-REFEX	
26		

ELM 5		P05
PNT	SIGNAL NAME	COLOR LV TYPE F
1	GND	Y

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 33 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 36 1.328.264.00
 <-- <-- <-- CONTINUATION

ELM 2 INPUT FROM BASIS BOARD P02
 PNT SIGNAL NAME COLOR LV TYPE F

 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +15.0
 6 -15.0
 7 T-SADA
 8 T-SADB
 9 T-SADC
 10 T-READSL
 11 T-WRTSL
 12 T-DT-CH1
 13 T-DT-CH2
 14 T-DT-CH3
 15 T-DT-MP
 16 T-DT-RES
 17
 18
 19
 20 + 0.0
 21 T-VARSPD
 22 + 0.0
 23 T-REFEXT
 24 +24.0
 25 + 0.0
 26 + 0.0

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GRP 36 1.328.264.00
 <-- <-- <-- CONTINUATION

ELM 3 CONNECTION REMOTE PANEL P03
 PNT SIGNAL NAME COLOR LV TYPE F

 1 + 0.0
 2 SR-REA01
 3
 4 SR-REP01
 5 SR-INP01
 6 SR-INP02
 7 SR-REA02
 8 SR-REATC
 9 SR-REP02
 10 SR-REPTC
 11 SR-INPTC
 12 BR-REG01
 13 SR-AREN8
 14 BR-INP01
 15 BR-REA01
 16 BR-REP01
 17 BR-SYN01
 18 BR-REA02
 19 BR-REC02
 20 BR-SYN02
 21 BR-INP02
 22 BR-RECTC
 23 BR-REP02
 24 BR-INPTC
 25 BR-REATC
 26 BR-REPTC
 27 BR-SYNTC
 28 +24.0
 29 BR-TCPRS
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40

GRP 36 1.328.264.00
 <-- <-- <-- CONTINUATION

ELM 4 CHANNEL REMOTE CONNECTOR JO4
 PNT SIGNAL NAME COLOR LV TYPE F

 1 + 0.0
 2 KEY
 3 SR-INP01
 4 SR-REA01
 5 SR-REP02
 6 SR-INPTC
 7 SR-AREN8
 8 BR-REA01
 9 BR-SYN01
 10 BR-REC02
 11 BR-INP02
 12 BR-REP02
 13 BR-REATC
 14 BR-SYNTC
 15 BR-TCPRS
 16
 17
 18
 19
 20 SR-REA01
 21 SR-REP01
 22 SR-INP02
 23 SR-REATC
 24 SR-REPTC
 25 BR-REC01
 26 BR-INP01
 27 BR-REP01
 28 BR-REA02
 29 BR-SYN02
 30 BR-RECTC
 31 BR-INPTC
 32 BR-REPTC
 33 +24.0
 34 KEY
 35
 36
 37

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 34 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 40 1.820.749.00
 INTERFERENCE FILTER, CH 01

ELM 1 CONNECTOR XLR, INPUT JO1
 PNT SIGNAL NAME COLOR LV TYPE F

 1 GND
 2 LINSB-01
 3 LINSB-01

ELM 2 CONNECTOR XLR, OUTPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F

 1 GND
 2 LOUSA-01
 3 LOUSB-01

ELM 3 CONNECTOR LINE FILTER, INPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F

 1 LINF8-01 6 D
 2 KEY
 3 + 0.0 S D
 4 LINF8-01 0 D

ELM 4 CONNECTOR LINE FILTER, OUTPUT P02
 PNT SIGNAL NAME COLOR LV TYPE F

 1 LOUFB-01 6 D
 2 KEY
 3 + 0.0 S D
 4 LOUFA-01 0 D

GRP 41 1.820.749.00
 INTERFERENCE FILTER, CH 02

ELM 1 CONNECTOR XLR, INPUT JO1
 PNT SIGNAL NAME COLOR LV TYPE F

 1 GND
 2 LINSB-02
 3 LINSB-02

ELM 2 CONNECTOR XLR, OUTPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F

 1 GND
 2 LOUSA-02
 3 LOUSB-02

ELM 3 CONNECTOR LINE FILTER, INPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F

 1 LINF8-02 6 D
 2 KEY
 3 + 0.0 S D
 4 LINF8-02 0 D

ELM 4 CONNECTOR LINE FILTER, OUTPUT P02
 PNT SIGNAL NAME COLOR LV TYPE F

 1 LOUFB-02 6 D
 2 KEY
 3 + 0.0 S D
 4 LOUFA-02 0 D

GRP 42 1.820.749.00
 INTERFERENCE FILTER, TIME CODE

ELM 1 CONNECTOR XLR, INPUT JO1
 PNT SIGNAL NAME COLOR LV TYPE F

 1 GND
 2 LINSB-TC
 3 LINSB-TC

ELM 2 CONNECTOR XLR, OUTPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F

 1 GND
 2 LOUSA-TC
 3 LOUSB-TC

ELM 3 CONNECTOR LINE FILTER, INPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F

 1 LINF8-TC 6 D
 2 KEY
 3 + 0.0 S D
 4 LINF8-TC 9 D

ELM 4 CONNECTOR LINE FILTER, OUTPUT P02
 PNT SIGNAL NAME COLOR LV TYPE F

 1 LOUFB-TC 6 D
 2 KEY
 3 + 0.0 S D
 4 LOUFA-TC 9 D

STUDER A812

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*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 35 *
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION
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GRP 43
CONNECTORS TO VU PANEL, EXTERNAL
=====
ELM 1
AUDIO CONN., FROM GRP20, ELM15/16/17
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 TAPMS-01 0 A
2 + 0.0 S A
3 INPAD-01 6 A
4 LOUFA-01 0 A
5 + 3.0 S A
6 MONIT-01 9 A
7 T-TC/RC 9 A
8 + 0.0 S A
9 TAPMS-02 0 A
10 INPAD-02 6 A
11 + 3.0 S A
12 LOUFA-02 0 A
13 GND 0 A
14 TAPAD-01 6 A
15 + 0.0 S A
16 INPDI-01 0 A
17 LOUFB-01 6 A
18 + 0.0 S A
19 + 0.0 S A
20 MONIT-02 9 A
21 + 0.0 S A
22 TAPAD-02 6 A
23 INPDI-02 0 A
24 + 3.0 S A
25 LOUFB-02 6 A
-----
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GRP 43
<-- <-- <-- CONTINUATION
=====
ELM 2
CONTRGL CONN., FROM GRP20, ELM07
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 + 0.0
2 + 5.6
3 +15.0
4 T-SADA
5 T-SADC
6 T-WRTSL
7 T-DT-CH2
8 T-DT-MP
9
10
11 T-VARSPD
12 T-REFEXT
13 + 0.0
14 + 0.0
15 + 5.6
16 -15.0
17 T-SADB
18 T-READSL
19 T-DT-CH1
20 T-DT-CH3
21
22
23 + 0.0
24 + 0.0
25 +24.0
-----
ELM 3
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 GND 0 L
-----
```

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GRP 43
<-- <-- <-- CONTINUATION
=====
ELM 11
CABLE TO GRP70, ELM09/11/12
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 TAPMS-01 0 B
2 + 0.0 S B
3 INPAD-01 6 B
4 LOUFA-01 0 B
5 + 0.0 S B
6 MONIT-01 9 B
7 T-TC/RC 9 B
8 + 0.0 S B
9 TAPMS-02 0 B
10 INPAD-02 6 B
11 + 0.0 S B
12 LOUFA-02 0 B
13 GND 0 B
14 TAPAD-01 6 B
15 + 0.0 S B
16 INPDI-01 0 B
17 LOUFB-01 6 B
18 + 0.0 S B
19 + 0.0 S B
20 MONIT-02 9 B
21 + 0.0 S B
22 TAPAD-02 6 B
23 INPDI-02 0 B
24 + 0.0 S B
25 LOUFB-02 6 B
-----
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* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 36 *
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION
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GRP 43
<-- <-- <-- CONTINUATION
=====
ELM 12
CABLE TO GRP70, ELM01
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 + 3.0
2 + 5.6
3 +15.0
4 T-SADA
5 T-SADC
6 T-WRTSL
7 T-DT-CH2
8 T-DT-MP
9
10
11 T-VARSPD
12 T-REFEXT
13 + 3.0
14 + 3.0
15 + 5.6
16 -15.0
17 T-SADB
18 T-READSL
19 T-DT-CH1
20 T-DT-CH3
21
22
23 + 3.0
24 + 3.0
25 +24.0
-----
```

```
GRP 46
SMPTE/EBU BUS
=====
ELM 1
CONNECTOR SMPTE/EBU BUS J04
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 FRMGND B
2 TRANSA B
3 RECEIVB B
4 RECEIVCM B
5 SPARE B
6 TRANSCM B
7 TRANSB B
8 RECEIVA B
9 FRMGND B
-----
ELM 2
CONNECTOR SMPTE/EBU BUS J05
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 FRMGND B
2 TRANSA B
3 RECEIVB B
4 RECEIVCM B
5 SPARE B
6 TRANSCM B
7 TRANSB B
8 RECEIVA B
9 FRMGND B
-----
```

```
GRP 50
1.811.777.00
PUSHBUTTON / DISPLAY BOARD
=====
ELM 1
TO GRP53, ELM01 P01
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5
6 TM-EN4
7 TM-EN3
8 TM-EN2
9
10 TM-RL6
11 TM-RL7
12
13 TM-RL3
14 TM-RL2
15 TM-RL5
16 TM-RL4
-----
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* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/10/24 * 14:12 *
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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```
GRP 45
1.810.763.00
NOISE REDUCTION SYSTEM CONTROL BOAR
=====
ELM 1
CONN. NOISE REDUCTION SYSTEM J01
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 B-BDY-01
2 B-BDY-02
3
4 KEY
5
6
7
8
9
10
11 B-TLC-01
12 KEY
13 B-TLC-02
14 +24.0
15 + 0.0
-----
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```
GRP 45
1.810.763.00
<-- <-- <-- CONTINUATION
=====
ELM 2
FROM GR 25, EL 01 J02
-----
PNT SIGNAL NAME COLOR LV TYPE F
1 + 0.0 19
2 + 0.0 20 + 0.0
3 + 5.6 21 T-VARSPD
4 + 5.6 22 + 0.0
5 +15.0 23 T-REFEXT
6 -15.0 24 +24.0
7 T-SADA 25 + 0.0
8 T-SADB 26 + 0.0
9
10 T-READSL
11 T-WRTSL
12 T-DT-CH1
13 T-DT-CH2
14 T-DT-CH3
15 T-DT-MP
16
17
18
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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 37 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 50 1.811.777.00
 <-- <-- <-- CONTINUATION

ELM 2 FROM GRP52, ELM02 P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5
 6 TM-EN4
 7 TM-EN3
 8 TM-EN2
 9 TM-EN1
 10 TM-RL6
 11 TM-RL7
 12 TM-RL0
 13 TM-RL1
 14 TM-RL2
 15 TM-RL3
 16 TM-RL4
 17 TM-RL5
 18 TM-B
 19 TM-DP
 20 TM-A
 21 TM-C
 22 TM-D
 23 TM-F
 24 TM-E
 25 TM-G
 26 TM-D9
 27 TM-D8
 28 TM-D7
 29 TM-D6
 30 TM-D5
 31 TM-D4
 32 TM-D3
 33 TM-D2
 34 TM-D1
 35 TM-D0
 36 TM-L2
 37 TM-L1
 38 TM-L3
 39 TM-L4
 40 TM-L5

GRP 51 1.328.215.00
 EDIT ASSEMBLY

ELM 1 FROM GRP52, ELM03
 PNT SIGNAL NAME COLOR LV TYPE F
 1 TM-RL3
 2 TM-RL2
 3 TM-RL1
 4 TM-CUE1
 5 TM-RL0
 6 TM-CUE2
 7 TM-ENO
 8 ANM-SH3
 9 ANM-SH2
 10 ANM-SH1

 ELM 2
 WIRE FIELD POTENTIOMETER
 PNT SIGNAL NAME COLOR LV TYPE F
 1 ANM-SH1
 2 ANM-SH2
 3 ANM-SH3

GRP 52 1.811.776.00
 TAPE DECK DISPLAY DRIVER

ELM 1 FROM GRP20, ELM04 P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +24.0
 6 +24.0
 7 TM-DSL4
 8 TM-ISL4
 9 TM-DRES
 10 TM-IRES
 11 TM-DRW
 12 TM-IRW
 13 TM-DENB
 14 TM-IENB
 15 TM-DADR2
 16 TM-IADR2
 17 TM-DADR1
 18 TM-IADR1
 19 TM-DADR0
 20 TM-IADR0
 21 TM-SHIR
 22 0.0 VCU
 23 TM-KBIR
 24 0.0 VCU
 25 TM-DATA7
 26 0.0 VCU
 27 TM-DATA6
 28 0.0 VCU
 29 TM-DATA5
 30 0.0 VCU
 31 TM-DATA4
 32 0.0 VCU
 33 TM-DATA3
 34 0.0 VCU
 35 TM-DATA2
 36 0.0 VCU
 37 TM-DATA1
 38 0.0 VCU
 39 TM-DATA0
 40 0.0 VCU

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 38 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

 <-- <-- <-- CONTINUATION

GRP 52 1.811.776.00
 <-- <-- <-- CONTINUATION

ELM 2 CONNECTOR COMMAND UNIT P03
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5
 6 TM-EN4
 7 TM-EN3
 8 TM-EN2
 9 TM-EN1
 10 TM-RL6
 11 TM-RL7
 12 TM-RL0
 13 TM-RL1
 14 TM-RL2
 15 TM-RL3
 16 TM-RL4
 17 TM-RL5
 18 TM-B
 19 TM-DP
 20 TM-A
 21 TM-C
 22 TM-D
 23 TM-F
 24 TM-E
 25 TM-G
 26 TM-D9
 27 TM-D8
 28 TM-D7
 29 TM-D6
 30 TM-D5
 31 TM-D4
 32 TM-D3
 33 TM-D2
 34 TM-D1
 35 TM-D0
 36 TM-L2
 37 TM-L1
 38 TM-L3
 39 TM-L4
 40 TM-L5

GRP 52 1.811.776.00
 <-- <-- <-- CONTINUATION

ELM 3 CONNECTOR PUSHBUTTON ASSEMBLY P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 TM-RL3
 2 TM-RL2
 3 TM-RL1
 4 TM-CUE1
 5 TM-RL0
 6 TM-CUE2
 7 TM-ENO
 8 ANM-SH3
 9 ANM-SH2
 10 ANM-SH1

 ELM 4
 CONNECTOR LCD DISPLAY UNIT P04
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 5.0
 3 TL-CS
 4 TL-ENB
 5 TL-WR
 6 TL-A0
 7 TL-D0
 8 TL-D1
 9 TL-D2
 10 TL-D3
 11 TL-D4
 12 TL-D5
 13 TL-D6
 14 TL-D7
 15 TL-RESET
 16 + 0.0

GRP 53 1.811.778.00
 SUBPANEL PUSH BUTTON BOARD

ELM 1 FROM GRP50, ELM01 P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5
 6 TM-EN4
 7 TM-EN3
 8 TM-EN2
 9
 10 TM-RL6
 11 TM-RL7
 12
 13 TM-RL3
 14 TM-RL2
 15 TM-RL5
 16 TM-RL4

```
*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 39 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
*****
<-- <-- <-- CONTINUATION
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GRP 54 1.811.233.00
LCD DISPLAY UNIT

ELM 1
FROM GRP52, ELM04 P04

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 5.0				
3	TL-CS				
4	TL-ENB				
5	TL-WR				
6	TL-A0				
7	TL-D0				
8	TL-D1				
9	TL-D2				
10	TL-D3				
11	TL-D4				
12	TL-D5				
13	TL-D6				
14	TL-D7				
15	TL-RESET				
16	+ 0.0				

GRP 58 1.820.861.00
TIMER CONTROL BOARD

ELM 1
FROM B. BOARD TAPE DECK, ELM 19 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH1				
13	T-DT-CH2				
14	T-DT-CH3				
15	T-DT-MP				
16	+ 0.0				

GRP 58 1.820.861.00
<-- <-- <-- CONTINUATION

ELM 3
TO MECHANICAL TIMER P03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+15.0T				
2	+ 0.0T				

ELM 2
TO VU-METER PANEL P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH1				
13	T-DT-CH2				
14	T-DT-CH3				
15	T-DT-MP				
16	+ 0.0				

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*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 40 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
*****
<-- <-- <-- CONTINUATION
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GRP 59 1.820.737.00
FUSE/SUPPLY FAILURE DETECTOR

ELM 1
FROM GRP20, ELM12 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+CAPMOT				
2	+CAPMOT				
3					
4	+24.0				
5	-STABSNS				
6	T-SJVPON				
7	+STABSNS				
8	+STABSNS				
9	+ 5.6				
10	+ 5.6				
11	+ 0.0				
12	+ 0.0				
13	-15.0				
14	+15.0				
15	+26.0				
16	-26.0				

GRP 60 1.811.250.00
MONITOR UNIT

ELM 1
AUDIO INPUT (FROM GRP20, ELM17) J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	MONIT-D1	9	N		
2	+ 0.0	5	N		
3	INPDI-01	9	N		
4	+ 0.0	5	N		
5	MONIT-02	9	N		
6	+ 0.0	5	N		
7	INPDI-02	9	N		
8	+ 0.0	5	N		
9	KEY				
10					
11	T-TC/RC	9	N		
12	+ 0.0	5	N		

GRP 60 1.811.250.00
<-- <-- <-- CONTINUATION

ELM 4
TO POTENTIOMETER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1P		1	U		
2P		2	U		
3P		3	U		
4P		4	U		
5P		0	U		
6P		0	U		

ELM 2
FROM GRP20, ELM09 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH1				
13	T-DT-CH2				
14	T-DT-CH3				
15	T-DT-MP				
16	T-DT-RES				

ELM 5
TO PHONES CONNECTOR J02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	S-0	N		
2	HEADPH-2	9	N		
3	HEADPH-1	6	N		
4	KEY				
5	S-MONMUT	2	N		

ELM 6
PHONES CONNECTOR

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	S-0	L		
1A	S-MONMUT	2	L		
2	HEADPH-2	9	L		
3	HEADPH-1	6	L		

ELM 7
LOUDSPEAKER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1		0	L		
2		8	L		

ELM 3
CONNECTOR LOUDSPEAKER J03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1				N	
2		8		N	
3		0		N	

```
*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 41 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
*****
<-- <-- <-- CONTINUATION
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GRP 70 1.820.794.00
DISTRIBUTION BOARD

```
=====
ELM 1
FROM GRP43, ELM12 P01
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5 +15.0
6 -15.0
7 T-SADA
8 T-SADB
9 T-SADC
10 T-READSL
11 T-WRTSL
12 T-DT-CH1
13 T-DT-CH2
14 T-DT-CH3
15 T-DT-MP
16 T-DT-RES
17
18
19
20 + 0.0
21 T-VARSPD
22 + 0.0
23 T-REFEXT
24 +24.0
25 + 0.0
26 + 0.0
-----
./.
```

GRP 70 1.820.794.00
CONTINUATION

```
=====
ELM 2
RESERVE P02
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5 +15.0
6 -15.0
7 T-SADA
8 T-SADB
9 T-SADC
10 T-READSL
11 T-WRTSL
12 T-DT-CH1
13 T-DT-CH2
14 T-DT-CH3
15 T-DT-MP
16 T-DT-RES
17
18
19
20 + 0.0
21 T-VARSPD
22 + 0.0
23 T-REFEXT
24 +24.0
25 + 0.0
26 + 0.0
-----
./.
```

GRP 70 1.820.794.00
CONTINUATION

```
=====
ELM 3
RESERVE P03
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5 +15.0
6 -15.0
7 T-SADA
8 T-SADB
9 T-SADC
10 T-READSL
11 T-WRTSL
12 T-DT-MP
13 T-REFEXT
14 + 0.0
15 T-VARSPD
16 +24.0
-----
ELM 4
COMMANDS CH 03 P04
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5 +15.0
6 -15.0
7 T-SADA
8 T-SADB
9 T-SADC
10 T-READSL
11 T-WRTSL
12 T-DT-CH3
13
14
15
16 +24.0
-----
./.
```

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*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 42 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
*****
<-- <-- <-- CONTINUATION
```

GRP 70 1.820.794.00
CONTINUATION

```
=====
ELM 5
COMMANDS CH 01 P05
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5 +15.0
6 -15.0
7 T-SADA
8 T-SADB
9 T-SADC
10 T-READSL
11 T-WRTSL
12 T-DT-CH1
13
14
15
16 +24.0
-----
```

```
=====
ELM 6
COMMANDS CH 02 P06
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5 +15.0
6 -15.0
7 T-SADA
8 T-SADB
9 T-SADC
10 T-READSL
11 T-WRTSL
12 T-DT-CH2
13
14
15
16 +24.0
-----
./.
```

GRP 70 1.820.794.00
CONTINUATION

```
=====
ELM 7
COMMANDS MONITOR AMPLIFIER P07
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5 +15.0
6 -15.0
7 T-SADA
8 T-SADB
9 T-SADC
10 T-READSL
11 T-WRTSL
12 T-DT-CH1
13 T-DT-CH2
14 T-DT-CH3
15 T-DT-MP
16 + 0.0
-----
```

```
=====
ELM 8
VU-METER CH 01, AUDIO J01
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 LOUFA-01
3 LOUFB-01
4 + 0.0
5 INPDI-01
6 INPAD-01
7 + 0.0
8 TAPAD-01
9 TAPMS-01
10 KEY
-----
./.
```

GRP 70 1.820.794.00
CONTINUATION

```
=====
ELM 9
AUDIO CH 01 (FROM GRP43, ELM11) J02
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 LOUFA-01
3 LOUFB-01
4 + 0.0
5 INPDI-01
6 INPAD-01
7 + 0.0
8 TAPAD-01
9 TAPMS-01
10 KEY
-----
```

```
=====
ELM 10
VU-METER CH 02, AUDIO J03
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 LOUFA-02
3 LOUFB-02
4 + 0.0
5 INPDI-02
6 INPAD-02
7 + 0.0
8 TAPAD-02
9 TAPMS-02
10 KEY
-----
```

```
=====
ELM 11
AUDIO CH 02 (FROM GRP43, ELM11) J04
PNT SIGNAL NAME COLOR LV TYPE F
-----
1 + 0.0
2 LOUFA-02
3 LOUFB-02
4 + 0.0
5 INPDI-02
6 INPAD-02
7 + 0.0
8 TAPAD-02
9 TAPMS-02
10 KEY
-----
```

STUDER A812

```
*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 43 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
*****
<-- <-- <-- CONTINUATION
```

GRP 70 1.820.794.00
CONTINUATION

ELM 12
AUDIO + TC (FROM GRP43, ELM11) J05

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	MONIT-01				
2	+ 0.0				
3					
4					
5	MONIT-02				
6	+ 0.0				
7					
8					
9	KEY				
10					
11	T-TC/RC				
12	+ 0.0				

ELM 13
MONITOR AMPLIFIER, AUDIO J06

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	MONIT-01				
2	+ 0.0				
3	INPDI-01				
4	+ 0.0				
5	MONIT-02				
6	+ 0.0				
7	INPDI-02				
8	+ 0.0				
9	KEY				
10					
11	T-TC/RC				
12	+ 0.0				

GRP 71 1.820.580.00
MONITOR UNIT

ELM 1
AUDIO INPUT J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	MONIT-01	9	N		
2	+ 0.0	S	N		
3	INPDI-01	9	N		
4	+ 0.0	S	N		
5	MONIT-02	9	N		
6	+ 0.0	S	N		
7	INPDI-02	9	N		
8	+ 0.0	S	N		
9	KEY				
10					
11	T-TC/RC	9	N		
12	+ 0.0	S	N		

ELM 2
FROM GRP70, ELM07 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH1				
13	T-DT-CH2				
14	T-DT-CH3				
15	T-DT-MP				
16	+ 0.0				

ELM 3
CONNECTOR LOUDSPEAKER J03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1				N	
2		8		N	
3		0		N	

GRP 71 1.820.580.00
CONTINUATION

ELM 4
TO POTENTIOMETER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1P		1		U	
2P		2		U	
3P		3		U	
4P		4		U	
5P		0		U	
6P		0		U	

ELM 5
TO PHONES CONNECTOR J02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	S-0		N	
2	HEADPH-2	9		N	
3	HEADPH-1	6		N	
4	KEY				
5	S-MONMUT	2		N	

ELM 6
PHONES CONNECTOR

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	S-0		L	
1A	S-MONMUT	2		L	
2	HEADPH-2	9		L	
3	HEADPH-1	6		L	

ELM 7
LOUDSPEAKER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1		0		L	
2		8		L	

```
*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 44 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
*****
<-- <-- <-- CONTINUATION
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GRP 72 1.811.888.00
CONNECTION BOARD

GRP 80
LIFT SOLENOID

ELM 1
LIFT SOLENOID

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0				
2	K-LIFT				

GRP 81
PRESS ASSEMBLY

ELM 1
PRESS SOLENOID A

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0				
2	K-PRESSA				

ELM 2
PRESS SOLENOID B

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0				
2	K-PRESSB				

ELM 3
STAND BY SOLENOID

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0				
2	K-STDBY				

ELM 4
PRESS ASSEMBLY SENSOR P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5					
6					
7	T-CLK1				
8	T-CLK2				
9					
10					

```
*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 45 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
*****
<-- <-- <-- CONTINUATION
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GRP 82 1.811.110.00
TAPE TENSION UNIT, LEFT

ELM 1
TO TO PERIPHERY DRIVER P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-WCLK1L				
8	T-WCLK2L				
9					
10					
11	AN-TTL				
12	T-TENDL				
13	T-CLK1				
14	T-CLK2				
15	T-POS1				
16	T-POS2				

ELM 2
TAPE END SWITCH, LEFT

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	T-LEDL	1	N		
2	+5.0L	2	N		
3	T-TNDL	4	N		
4	KEY				

ELM 3
TO TAPE MOVE SENSOR, LEFT P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	T-POS1				
6	T-POS2				
7	T-CLK1				
8	T-CLK2				
9					
10					

GRP 82 1.811.110.00
<-- <-- <-- CONTINUATION

ELM 4
TO SPOOLING MOTOR TACHO SENSOR L.P03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5					
6					
7	T-WCLK1L				
8	T-WCLK2L				
9					
10					

ELM 5
HOLD SOLENOID, LEFT

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0				
2	K-TTSL				

GRP 83 1.811.120.00
TAPE TENSION UNIT, RIGHT

ELM 1
TO TO PERIPHERY DRIVER P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-WCLK1R				
8	T-WCLK2R				
9					
10					
11	AN-TTR				
12	T-TENDR				
13	T-CLK1				
14	T-CLK2				
15	T-POS1				
16	T-POS2				

ELM 2
TAPE END SWITCH, RIGHT

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	T-LEDR	1	N		
2	+5.0R	2	N		
3	T-TNDR	4	N		
4	KEY				

ELM 3
TO TAPE MOVE SENSOR, RIGHT P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	T-POS1				
6	T-POS2				
7	T-CLK1				
8	T-CLK2				
9					
10					

```
*****
* WILLI STUDER AG * L O C A T I O N P I N L I S T * 89/09/18 * 12:22 * P A G E 46 *
*****
* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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<-- <-- <-- CONTINUATION
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GRP 83 1.811.120.00
<-- <-- <-- CONTINUATION

ELM 4
TO SPOOLING MOTOR TACHO SENSOR R.P03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5					
6					
7	T-WCLK1R				
8	T-WCLK2R				
9					
10					

ELM 5
HOLD SOLENOID, RIGHT

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0				
2	K-TTSR				

GRP 84 1.021.695.00
CAPSTAN MOTOR (ELECTRONICS BOARD)

ELM 1
FROM GRP85, ELM02 J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	CPHASE-R	2	F		
2	CPHASE-T	9	F		
3	CPHASE-S	0	F		
4	TC-HALL1		F		
5					
6	+15.0		F		
7	TC-HALL2		F		
8	TD-TCM1		F		
9	+ 5V		F		
10	TC-HALL3		F		
11	TD-TCM2		F		
12	+ 0.0		F		

ELM 2
TACHO SENSOR UNIT (WIRE FIELD)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1		3	U		
2		4	U		
3		5	U		
4		6	U		

ELM 3
HALL SENSOR BOARD (WIRE FIELD)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1		0	U		
2		2	U		
3		3	U		
4		4	U		
5		5	U		
6		6	U		
7		7	U		
8		8	U		

GRP 84 1.021.695.00
<-- <-- <-- CONTINUATION

ELM 4
STATOR (WIRE FIELD)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	CPHASE-R	2	L		
2	CPHASE-S	0	L		
3	CPHASE-T	9	L		

ELM 5
GROUND CONNECTION (WIRE FIELD)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	GND	0	L		

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* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

<-- <-- <-- CONTINUATION

GRP 85 1.820.774.00
CAPSTAN MOTOR DRIVE AMPLIFIER

ELM 1 P01
PNT SIGNAL NAME COLOR LV TYPE F
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5 +15.0
6 -15.0
7 AN-CSPDC
8 TD-TCM1
9 + 0.0
10 TD-TCM2
11 + 0.0
12 + 0.0
13 TC-CPREF
14 TC-CAPDC
15 TM-C76K
16 + 0.0

ELM 2 P02
TO GRP84, ELM01
PNT SIGNAL NAME COLOR LV TYPE F
1 CPHASE-R M
2 CPHASE-T M
3 CPHASE-S M
4 TC-HALL1 M
5 -15.0 M
6 +15.0 M
7 TC-HALL2 M
8 TD-TCM1 M
9 + 5V M
10 TC-HALL3 M
11 TD-TCM2 M
12 + 0.0 M

GRP 85 1.820.774.00
<-- <-- <-- CONTINUATION

ELM 3 P03
SUPPLY (FROM GRP20, ELM72)
PNT SIGNAL NAME COLOR LV TYPE F
1 OCAPMOT M
2
3 +CAPMOT M
4 OCAPMOT M
5 + 0.0 M
6 +CAPMOT M

GRP 86
BRAKE ASSEMBLY

ELM 1
BRAKE SOLENOID
PNT SIGNAL NAME COLOR LV TYPE F
1 +24.0 M
2 K-BRAKE M
3
ELM 2
EDIT SOLENOID
PNT SIGNAL NAME COLOR LV TYPE F
1 +24.0 M
2 K-EDIT M
3

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<-- <-- <-- CONTINUATION

GRP 87
SPOOLING MOTOR, LEFT

ELM 1 J01
CONNECTOR SPOOLING MOTOR LEFT
PNT SIGNAL NAME COLOR LV TYPE F
1
2 GND 4 M
3
4 AN-R-L M
5 AN-S-L M
6 AN-T-L M

ELM 2 P03
CONN. TACHO SENSOR (S 2000 ONLY)
PNT SIGNAL NAME COLOR LV TYPE F
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5
6
7 T-WCLK1L
8 T-WCLK2L
9
10

GRP 88
SPOOLING MOTOR, RIGHT

ELM 1 J01
CONNECTOR SPOOLING MOTOR RIGHT
PNT SIGNAL NAME COLOR LV TYPE F
1
2 GND 4 M
3
4 AN-R-R M
5 AN-S-R M
6 AN-T-R M

ELM 2 P03
CONN. TACHO SENSOR (S 2000 ONLY)
PNT SIGNAL NAME COLOR LV TYPE F
1 + 0.0
2 + 0.0
3 + 5.6
4 + 5.6
5
6
7 T-WCLK1R
8 T-WCLK2R
9
10

GRP 90
HEAD BLOCK ASSEMBLY, 2 CH. TIME CODE

ELM 1 P01
HEAD BLOCK CONNECTOR
PNT SIGNAL NAME COLOR LV TYPE F
1
2
3
4
5
6
7
8
9
10
11 + 0.0 0 A
12 + 5.6 A
13 +15.0 2 A
14 -15.0 6 A
15
16
17
18
19
20
21 ERAHO-02
22 ERAHH-02
23 ERAHL-02 3 A
24 ERAHM-02 5 A
25 ERAHH-TC 3 A
26 RECHH-TC 5 A
27 REPHH-TC 5 A
28
29 RECHL-02 0 A
30 RECHH-02 1 A
31 + 0.0 S A
32 REPRO-02 6 A
33 REPRE-02 0 A
34
35
36
37 ERAHO-01
38 ERAHH-01
39 ERAHL-01 3 A
40 ERAHM-01 5 A
41 ERAHL-TC 5 A
42 RECHL-TC 3 A
43 REPHL-TC 3 A
44 + 0.0 S A
45 ERACS-02
46 RECHL-01 0 A
47 RECHH-01 1 A

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*****
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*****
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<-- <-- <-- CONTINUATION
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GRP 90

<-- <-- <-- CONTINUATION

ELM 1

<-- <-- <-- CONTINUATION

PNT SIGNAL NAME COLOR LV TYPE F

48	+ 0.0	S	A	
49	REPR0-01	6	A	
50	REPRE-01	0	A	

ELM 2

REPRODUCE PREAMPLIFIER

PNT SIGNAL NAME COLOR LV TYPE F

1	+15.0	2	L	
2	REPRE-01	0	L	
3	REPR0-01	6	L	
4	+ 0.0	S	L	
5	+ 0.0	S	L	
6	REPR0-02	6	L	
7	REPRE-02	0	L	
8	-15.0	6	L	
9				
10				
11	REPHL-01	0	L	
12	REPHH-01	1	L	
13	REPHL-02	0	L	
14	REPHH-02	1	L	

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
+ FAN	2			10	1	5			L	1.811.510.81 + 82 ONLY		
	6			10	3	7			Y	1.811.510.83		
+ 0.0	0			7	5	4			L	RECTIFIER	D01	70.01.0231
	0			7	6	3			L	RECTIFIER	D02	70.01.0231
	0			7	8	2			L	CAPACITOR	C04	59.26.7103
	0			7	9	2			L	CAPACITOR	C05	59.26.7103
	0			7	10	1			L	CAPACITOR	C06	59.26.7103
	0			7	12	2			M	CONNECTOR TO GRP30, ELM01	P01	
	0			7	12	3			M	CONNECTOR TO GRP30, ELM01	P01	
	0			7	12	5			M	CONNECTOR TO GRP30, ELM01	P01	
	6			10	1	6			L	1.811.510.81 + 82 ONLY		
	0			10	1	7			U	1.811.510.81 + 82 ONLY		
	0			10	2	3			M	1.811.510.81 + 82 ONLY		
	2			10	3	4			L	1.811.510.83		
	2			10	3	8			Y	1.811.510.83		
	0			19	1	5			F	FROM GRP30, ELM02	J01	
	0			19	1	6			F	FROM GRP30, ELM02	J01	
	0			19	1	8			F	FROM GRP30, ELM02	J01	
	0			19	1	9			F	FROM GRP30, ELM02	J01	
	0			19	1	10			F	FROM GRP30, ELM02	J01	
	0			19	1	13			F	FROM GRP30, ELM02	J01	
	0			19	1	14			F	FROM GRP30, ELM02	J01	
	0			19	1	21			F	FROM GRP30, ELM02	J01	
	0			19	2	5			M	TO GRP20, ELM10	P01	
	0			19	2	6			M	TO GRP20, ELM10	P01	
	0			19	2	8			M	TO GRP20, ELM10	P01	
	0			19	2	9			M	TO GRP20, ELM10	P01	
	0			19	2	10			M	TO GRP20, ELM10	P01	
	0			19	2	13			M	TO GRP20, ELM10	P01	
	0			19	2	14			M	TO GRP20, ELM10	P01	
	0			19	2	21			M	TO GRP20, ELM10	P01	
				20	1	1				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
				20	1	2				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
				20	1	9				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
				20	1	11				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
				20	1	12				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
				20	1	16				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
				20	4	1				TAPE DECK DISPLAY DRIVER	P04	
				20	4	2				TAPE DECK DISPLAY DRIVER	P04	
				20	5	1				PARALLEL REMOTE IF (GRP35)	P05	
				20	5	2				PARALLEL REMOTE IF (GRP35)	P05	
				20	7	1				VU-METER PANEL, EXTERNAL	P07	
				20	7	2				VU-METER PANEL, EXTERNAL	P07	
				20	7	20				VU-METER PANEL, EXTERNAL	P07	
				20	7	22				VU-METER PANEL, EXTERNAL	P07	
				20	7	25				VU-METER PANEL, EXTERNAL	P07	
				20	7	26				VU-METER PANEL, EXTERNAL	P07	
				20	8	1				VU-METER PANEL, EXTERNAL	P08	
				20	8	2				VU-METER PANEL, EXTERNAL	P08	
				20	8	20				VU-METER PANEL, EXTERNAL	P08	
				20	8	22				VU-METER PANEL, EXTERNAL	P08	
				20	8	25				VU-METER PANEL, EXTERNAL	P08	
				20	8	26				VU-METER PANEL, EXTERNAL	P08	

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF				20	9	1				MONITOR UNIT, INTERN	P09	
+ 0.0				20	9	2				MONITOR UNIT, INTERN	P09	
				20	10	5			F	FROM STABILIZER GRP30, ELM02	J01	
				20	10	6			F	FROM STABILIZER GRP30, ELM02	J01	
				20	10	8			F	FROM STABILIZER GRP30, ELM02	J01	
				20	10	9			F	FROM STABILIZER GRP30, ELM02	J01	
				20	10	10			F	FROM STABILIZER GRP30, ELM02	J01	
				20	10	13			F	FROM STABILIZER GRP30, ELM02	J01	
				20	10	14			F	FROM STABILIZER GRP30, ELM02	J01	
				20	10	21			F	FROM STABILIZER GRP30, ELM02	J01	
				20	11	3			F	SYNCHRONIZER (SUPPLY)	P10	
				20	11	4			F	SYNCHRONIZER (SUPPLY)	P10	
				20	11	5			F	SYNCHRONIZER (SUPPLY)	P10	
				20	11	7			F	SYNCHRONIZER (SUPPLY)	P10	
				20	11	8			F	SYNCHRONIZER (SUPPLY)	P10	
				20	12	11				FUSE FAILURE DETECTOR (GRP59)	P11	
				20	12	12				FUSE FAILURE DETECTOR (GRP59)	P11	
	S			20	15	1			N	TO VU-METER PANEL, CH 1	J02	
	S			20	15	4			N	TO VU-METER PANEL, CH 1	J02	
	S			20	15	7			N	TO VU-METER PANEL, CH 1	J02	
	S			20	16	1			N	TO VU-METER PANEL, CH 2	J03	
	S			20	16	4			N	TO VU-METER PANEL, CH 2	J03	
	S			20	16	7			N	TO VU-METER PANEL, CH 2	J03	
	S			20	17	2			N	TO SOURCE SELECTOR (AUDIO)	J04	
	S			20	17	4			N	TO SOURCE SELECTOR (AUDIO)	J04	
	S			20	17	6			N	TO SOURCE SELECTOR (AUDIO)	J04	
	S			20	17	12			N	TO SOURCE SELECTOR (AUDIO)	J04	
	0			20	20	4			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	0			20	20	5			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	0			20	20	6			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	0			20	20	7			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	0			20	20	8			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	0			20	20	12			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
				20	20	13				WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	S			20	21	1			U	WIRE FIELD, TO CONN. GRP20, ELM67		1.811.898.00
	S			20	25	3			U	WIRE FIELD, TC HEADS + TC IN/OUT		
	S			20	25	6			U	WIRE FIELD, TC HEADS + TC IN/OUT		
	S			20	25	9			U	WIRE FIELD, TC HEADS + TC IN/OUT		
	S			20	25	12			U	WIRE FIELD, TC HEADS + TC IN/OUT		
	S			20	25	15			U	WIRE FIELD, TC HEADS + TC IN/OUT		
	S			20	27	3			U	WIRE FIELD, RECORD HEAD CH 1		
	S			20	28	3			U	WIRE FIELD, REPRODUCE PREAMP. CH 1		
	S			20	29	3			U	WIRE FIELD, IN/OUT CH 1 + SUPPLY		
	S			20	29	6			U	WIRE FIELD, IN/OUT CH 1 + SUPPLY		
	0			20	30	1			U	WIRE FIELD, SUPPLY		
	S			20	32	3			U	WIRE FIELD, RECORD HEAD CH 2		
	S			20	33	3			U	WIRE FIELD, REPRODUCE PREAMP. CH 2		
	S			20	34	3			U	WIRE FIELD, IN/OUT CH 2		
	S			20	34	6			U	WIRE FIELD, IN/OUT CH 2		
				20	38	1				PAR. CONT. INT. SYNCHRONIZER	P12	
				20	38	2				PAR. CONT. INT. SYNCHRONIZER	P12	
				20	38	9				PAR. CONT. INT. SYNCHRONIZER	P12	
				20	38	11				PAR. CONT. INT. SYNCHRONIZER	P12	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF + 0.0												
				36	2	26				INPUT FROM BASIS BOARD	P02	
				36	3	1				CONNECTION REMOTE PANEL	P03	
				36	4	1				CHANNEL REMOTE CONNECTOR	J04	
	S			40	3	3		D		CONNECTOR LINE FILTER, INPUT	P01	
	S			40	4	3		D		CONNECTOR LINE FILTER, OUTPUT	P02	
	S			41	3	3		D		CONNECTOR LINE FILTER, INPUT	P01	
	S			41	4	3		D		CONNECTOR LINE FILTER, OUTPUT	P02	
	S			42	3	3		D		CONNECTOR LINE FILTER, INPUT	P01	
	S			42	4	3		D		CONNECTOR LINE FILTER, OUTPUT	P02	
	S			43	1	2		A		AUDIO CONN., FROM GRP20, ELM15/16/17		
	S			43	1	5		A		AUDIO CONN., FROM GRP20, ELM15/16/17		
	S			43	1	8		A		AUDIO CONN., FROM GRP20, ELM15/16/17		
	S			43	1	11		A		AUDIO CONN., FROM GRP20, ELM15/16/17		
	S			43	1	15		A		AUDIO CONN., FROM GRP20, ELM15/16/17		
	S			43	1	18		A		AUDIO CONN., FROM GRP20, ELM15/16/17		
	S			43	1	19		A		AUDIO CONN., FROM GRP20, ELM15/16/17		
	S			43	1	21		A		AUDIO CONN., FROM GRP20, ELM15/16/17		
	S			43	1	24		A		AUDIO CONN., FROM GRP20, ELM15/16/17		
				43	2	1				CONTROL CONN., FROM GRP20, ELM07		
				43	2	13				CONTROL CONN., FROM GRP20, ELM07		
				43	2	14				CONTROL CONN., FROM GRP20, ELM07		
				43	2	23				CONTROL CONN., FROM GRP20, ELM07		
				43	2	24				CONTROL CONN., FROM GRP20, ELM07		
	S			43	11	2		B		CABLE TO GRP70, ELM09/11/12		
	S			43	11	5		B		CABLE TO GRP70, ELM09/11/12		
	S			43	11	8		B		CABLE TO GRP70, ELM09/11/12		
	S			43	11	11		B		CABLE TO GRP70, ELM09/11/12		
	S			43	11	15		B		CABLE TO GRP70, ELM09/11/12		
	S			43	11	18		B		CABLE TO GRP70, ELM09/11/12		
	S			43	11	19		B		CABLE TO GRP70, ELM09/11/12		
	S			43	11	21		B		CABLE TO GRP70, ELM09/11/12		
	S			43	11	24		B		CABLE TO GRP70, ELM09/11/12		
				43	12	1				CABLE TO GRP70, ELM01		
				43	12	13				CABLE TO GRP70, ELM01		
				43	12	14				CABLE TO GRP70, ELM01		
				43	12	23				CABLE TO GRP70, ELM01		
				43	12	24				CABLE TO GRP70, ELM01		
				50	1	1				TO GRP53, ELM01	P01	
				50	1	2				TO GRP53, ELM01	P01	
				50	2	1				FROM GRP52, ELM02	P02	
				50	2	2				FROM GRP52, ELM02	P02	
				52	1	1				FROM GRP20, ELM04	P01	
				52	1	2				FROM GRP20, ELM04	P01	
				52	2	1				CONNECTOR COMMAND UNIT	P03	
				52	2	2				CONNECTOR COMMAND UNIT	P03	
				52	4	1				CONNECTOR LCD DISPLAY UNIT	P04	
				52	4	16				CONNECTOR LCD DISPLAY UNIT	P04	
				53	1	1				FROM GRP50, ELM01	P01	
				53	1	2				FROM GRP50, ELM01	P01	
				54	1	1				FROM GRP52, ELM04	P04	
				54	1	16				FROM GRP52, ELM04	P04	
				58	1	1				FROM B. BOARD TAPE DECK, ELM 19	P01	
				58	1	2				FROM B. BOARD TAPE DECK, ELM 19	P01	
				58	1	16				FROM B. BOARD TAPE DECK, ELM 19	P01	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF + 0.0												
				58	2	1				TO VU-METER PANEL	P02	
				58	2	2				TO VU-METER PANEL	P02	
				58	2	16				TO VU-METER PANEL	P02	
				59	1	11				FROM GRP20, ELM12	P01	
				59	1	12				FROM GRP20, ELM12	P01	
	S			60	1	2		N		AUDIO INPUT (FROM GRP20, ELM17)	J01	
	S			60	1	4		N		AUDIO INPUT (FROM GRP20, ELM17)	J01	
	S			60	1	6		N		AUDIO INPUT (FROM GRP20, ELM17)	J01	
	S			60	1	8		N		AUDIO INPUT (FROM GRP20, ELM17)	J01	
	S			60	1	12		N		AUDIO INPUT (FROM GRP20, ELM17)	J01	
				60	2	1				FROM GRP20, ELM09	P01	
				60	2	2				FROM GRP20, ELM09	P01	
S-O				60	5	1		N		TO PHONES CONNECTOR	J02	
S-O				60	6	1		L		PHONES CONNECTOR		
				70	1	1				FROM GRP43, ELM12	P01	
				70	1	2				FROM GRP43, ELM12	P01	
				70	1	20				FROM GRP43, ELM12	P01	
				70	1	22				FROM GRP43, ELM12	P01	
				70	1	25				FROM GRP43, ELM12	P01	
				70	1	26				FROM GRP43, ELM12	P01	
				70	2	1				RESERVE	P02	
				70	2	2				RESERVE	P02	
				70	2	20				RESERVE	P02	
				70	2	22				RESERVE	P02	
				70	2	25				RESERVE	P02	
				70	2	26				RESERVE	P02	
				70	3	1				RESERVE	P03	
				70	3	2				RESERVE	P03	
				70	3	14				RESERVE	P03	
				70	4	1				COMMANDS CH 03	P04	
				70	4	2				COMMANDS CH 03	P04	
				70	5	1				COMMANDS CH 01	P05	
				70	5	2				COMMANDS CH 01	P05	
				70	6	1				COMMANDS CH 02	P06	
				70	6	2				COMMANDS CH 02	P06	
				70	7	1				COMMANDS MONITOR AMPLIFIER	P07	
				70	7	2				COMMANDS MONITOR AMPLIFIER	P07	
				70	7	16				COMMANDS MONITOR AMPLIFIER	P07	
				70	8	1				VU-METER CH 01, AUDIO	J01	
				70	8	4				VU-METER CH 01, AUDIO	J01	
				70	8	7				VU-METER CH 01, AUDIO	J01	
				70	9	1				AUDIO CH 01 (FROM GRP43, ELM11)	J02	
				70	9	4				AUDIO CH 01 (FROM GRP43, ELM11)	J02	
				70	9	7				AUDIO CH 01 (FROM GRP43, ELM11)	J02	
				70	10	1				VU-METER CH 02, AUDIO	J03	
				70	10	4				VU-METER CH 02, AUDIO	J03	
				70	10	7				VU-METER CH 02, AUDIO	J03	
				70	11	1				AUDIO CH 02 (FROM GRP43, ELM11)	J04	
				70	11	4				AUDIO CH 02 (FROM GRP43, ELM11)	J04	
				70	11	7				AUDIO CH 02 (FROM GRP43, ELM11)	J04	
				70	12	2				AUDIO + TC (FROM GRP43, ELM11)	J05	
				70	12	6				AUDIO + TC (FROM GRP43, ELM11)	J05	
				70	12	12				AUDIO + TC (FROM GRP43, ELM11)	J05	
				70	13	2				MONITOR AMPLIFIER, AUDIO	J06	

 * WILLI STUDDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 58 *
 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF + 0.0					70	13 4				MONITOR AMPLIFIER, AUDIO	J06	
					70	13 6				MONITOR AMPLIFIER, AUDIO	J06	
					70	13 8				MONITOR AMPLIFIER, AUDIO	J06	
					70	13 12				MONITOR AMPLIFIER, AUDIO	J06	
	S				71	1 2			N	AUDIO INPUT	J01	
	S				71	1 4			N	AUDIO INPUT	J01	
	S				71	1 6			N	AUDIO INPUT	J01	
	S				71	1 8			N	AUDIO INPUT	J01	
	S				71	1 12			N	AUDIO INPUT	J01	
					71	2 1				FROM GRP70, ELM07	P01	
					71	2 2				FROM GRP70, ELM07	P01	
					71	2 16				FROM GRP70, ELM07	P01	
	S=0				71	5 1			N	TO PHONES CONNECTOR	J02	
	S=0				71	6 1			L	PHONES CONNECTOR		
					81	4 1				PRESS ASSEMBLY SENSOR	P01	
					81	4 2				PRESS ASSEMBLY SENSOR	P01	
					82	1 1				TO TD PERIPHERY DRIVER	P01	
					82	1 2				TO TD PERIPHERY DRIVER	P01	
					82	3 1				TO TAPE MOVE SENSOR, LEFT	P02	
					82	3 2				TO TAPE MOVE SENSOR, LEFT	P02	
					82	4 1				TO SPOOLING MOTOR TACHO SENSOR L.P03		
					82	4 2				TO SPOOLING MOTOR TACHO SENSOR L.P03		
					83	1 1				TO TD PERIPHERY DRIVER	P01	
					83	1 2				TO TD PERIPHERY DRIVER	P01	
					83	3 1				TO TAPE MOVE SENSOR, RIGHT	P02	
					83	3 2				TO TAPE MOVE SENSOR, RIGHT	P02	
					83	4 1				TO SPOOLING MOTOR TACHO SENSOR R.P03		
					83	4 2				TO SPOOLING MOTOR TACHO SENSOR R.P03		
					84	1 12			F	FROM GRP85, ELM02	J01	
					85	1 1					P01	
					85	1 2					P01	
					85	1 9					P01	
					85	1 11					P01	
					85	1 12					P01	
					85	1 16					P01	
					85	2 12			M	TO GRP84, ELM01	P02	
					85	3 5			M	SUPPLY (FROM GRP20, ELM72)	P03	
					87	2 1				CONN. TACHO SENSOR (S 2000 ONLY)	P03	
					87	2 2				CONN. TACHO SENSOR (S 2000 ONLY)	P03	
					88	2 1				CONN. TACHO SENSOR (S 2000 ONLY)	P03	
					88	2 2				CONN. TACHO SENSOR (S 2000 ONLY)	P03	
	0				90	1 11			A	HEAD BLOCK CONNECTOR	P01	
	S				90	1 31			A	HEAD BLOCK CONNECTOR	P01	
	S				90	1 44			A	HEAD BLOCK CONNECTOR	P01	
	S				90	1 48			A	HEAD BLOCK CONNECTOR	P01	
	S				90	2 4			L	REPRODUCE PREAMPLIFIER		
	S				90	2 5			L	REPRODUCE PREAMPLIFIER		
+ 0.0T	6				58	3 2				TO MECHANICAL TIMER	P03	
+ 5.0					27	5 5				CONNECTOR RS 232 (SERVICE)	J02	
					33	1 2				FROM GRP35, ELM01	P01	
					35	1 2				TO GRP35, ELM01	P01	
					52	4 2				CONNECTOR LCD DISPLAY UNIT	P04	
					54	1 2				FROM GRP52, ELM04	P04	

 * WILLI STUDDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 59 *
 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
+ 5.6	3				19	1 1			F	FROM GRP30, ELM02	J01	
	3				19	1 2			F	FROM GRP30, ELM02	J01	
	3				19	2 1			M	TO GRP20, ELM10	P01	
	3				19	2 2			M	TO GRP20, ELM10	P01	
					20	1 3				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
					20	1 4				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
					20	4 3				TAPE DECK DISPLAY DRIVER	P04	
					20	4 4				TAPE DECK DISPLAY DRIVER	P04	
					20	5 3				PARALLEL REMOTE IF (GRP35)	P05	
					20	5 4				PARALLEL REMOTE IF (GRP35)	P05	
					20	7 3				VU-METER PANEL, EXTERNAL	P07	
					20	7 4				VU-METER PANEL, EXTERNAL	P07	
					20	8 3				VU-METER PANEL, EXTERNAL	P08	
					20	8 4				VU-METER PANEL, EXTERNAL	P08	
					20	9 3				MONITOR UNIT, INTERN	P09	
					20	9 4				MONITOR UNIT, INTERN	P09	
					20	10 1			F	FROM STABILIZER GRP30, ELM02	J01	
					20	10 2			F	FROM STABILIZER GRP30, ELM02	J01	
					20	11 1			F	SYNCHRONIZER (SUPPLY)	P10	
					20	11 2			F	SYNCHRONIZER (SUPPLY)	P10	
	3				20	20 1			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	3				20	20 2			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	3				20	26 1			U	WIRE FIELD, ERASE HEAD CH 1 + SUPPLY		
					20	38 3				PAR. CONT. INT. SYNCHRONIZER	P12	
					20	38 4				PAR. CONT. INT. SYNCHRONIZER	P12	
					20	41 20				CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20	42 20				CAPSTAN CONTROL UNIT	J06	1.820.764.00
					20	43 16A				MASTER SERIAL INTERFACE	J07	1.820.753.00
					20	43 16B				MASTER SERIAL INTERFACE	J07	1.820.753.00
					20	44 20				MP-UNIT MASTER	J08	1.811.786.00
					20	45 20				SMPT/EBU INTERFACE	J09	1.820.751.00
					20	46 18A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	46 18B				MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	47 24				TIME CODE WRITE/READ UNIT	J11	1.820.721.81
					20	48 24				TIME CODE DELAY UNIT	J12	1.820.722.81
					20	49 24				HF-DRIVER, CH 1	J13	1.820.713.00
					20	50 24				RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20	51 24				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52 24				LINE AMPLIFIER, CH 1	J16	1.820.714.81
					20	53 24				MONO-STEREO-SWITCH	J17	1.820.720.00
					20	54 24				HF-DRIVER, CH 2	J18	1.820.713.00
					20	55 24				RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56 24				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57 24				LINE AMPLIFIER, CH 2	J21	1.820.714.81
	3				20	65 24			F	CONNECTOR TO GRP25, ELM01	P15	
	3				20	66 4			F	CONNECTOR TO GRP27, ELM04	P16	
	3				20	80 12			B	CONN. HEAD BLOCK ASSEMBLY		
					24	3 3				FROM GRP26, ELM02	P01	
					24	3 4				FROM GRP26, ELM02	P01	
					25	1 24			M	SUPPLY + SOLENOIDS	P07	
					25	3 3				TAPE TRANSPARENT	P08	
					25	3 4				TAPE TRANSPARENT	P08	
					25	4 3				USER	P06	
					25	4 4				USER	P06	
					25	5 3				TAPE TENSION SENSOR, LEFT	P04	

STUDER A812

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 87/02/10 * 12:22 * P A G E 60 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF + 5.6					25	5	4			TAPE TENSION SENSOR, LEFT	P04	
					25	6	3			TAPE TENSION SENSOR, RIGHT	P03	
					25	6	4			TAPE TENSION SENSOR, RIGHT	P03	
					25	7	3			FROM GRP26, ELM01	P02	
					25	7	4			FROM GRP26, ELM01	P02	
					25	8	3			FROM GRP 26, ELM02	P01	
					25	8	4			FROM GRP 26, ELM02	P01	
					26	1	3		L	TO GRP25, ELM07/GRP27, ELM03		
					26	1	4		L	TO GRP25, ELM07/GRP27, ELM03		
					26	2	3		L	TO GRP24, ELM03/GRP25, ELM08		
					26	2	4		L	TO GRP24, ELM03/GRP25, ELM08		
					27	3	3			FROM GRP26, ELM01	P03	
					27	3	4			FROM GRP26, ELM01	P03	
					27	4	4		M	SUPPLY (FROM GRP20, ELM20)	J01	
					30	2	1		M	OUTPUT (TO GRP20, ELM10)	P01	
					30	2	2		M	OUTPUT (TO GRP20, ELM10)	P01	
					35	2	3			FROM GRP20, ELM05	P02	
					35	2	4			FROM GRP20, ELM05	P02	
					36	1	3			OUTPUT TO VU-PANEL	P01	
					36	1	4			OUTPUT TO VU-PANEL	P01	
					36	2	3			INPUT FROM BASIS BOARD	P02	
					36	2	4			INPUT FROM BASIS BOARD	P02	
					43	2	2			CONTROL CONN., FROM GRP20, ELM07		
					43	2	15			CONTROL CONN., FROM GRP20, ELM07		
					43	12	2			CABLE TO GRP70, ELM01		
					43	12	15			CABLE TO GRP70, ELM01		
					50	1	3			TO GRP53, ELM01	P01	
					50	1	4			TO GRP53, ELM01	P01	
					50	2	3			FROM GRP52, ELM02	P02	
					50	2	4			FROM GRP52, ELM02	P02	
					52	1	3			FROM GRP20, ELM04	P01	
					52	1	4			FROM GRP20, ELM04	P01	
					52	2	3			CONNECTOR COMMAND UNIT	P03	
					52	2	4			CONNECTOR COMMAND UNIT	P03	
					53	1	3			FROM GRP50, ELM01	P01	
					53	1	4			FROM GRP50, ELM01	P01	
					58	1	3			FROM B. BOARD TAPE DECK, ELM 19	P01	
					58	1	4			FROM B. BOARD TAPE DECK, ELM 19	P01	
					58	2	3			TO VU-METER PANEL	P02	
					58	2	4			TO VU-METER PANEL	P02	
					59	1	9			FROM GRP20, ELM12	P01	
					59	1	10			FROM GRP20, ELM12	P01	
					60	2	3			FROM GRP20, ELM09	P01	
					60	2	4			FROM GRP20, ELM09	P01	
					70	1	3			FROM GRP43, ELM12	P01	
					70	1	4			FROM GRP43, ELM12	P01	
					70	2	3			RESERVE	P02	
					70	2	4			RESERVE	P02	
					70	3	3			RESERVE	P03	
					70	3	4			RESERVE	P03	
					70	4	3			COMMANDS CH 03	P04	
					70	4	4			COMMANDS CH 03	P04	
					70	5	3			COMMANDS CH 01	P05	
					70	5	4			COMMANDS CH 01	P05	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 61 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF + 5.6					70	6	3			COMMANDS CH 02	P06	
					70	6	4			COMMANDS CH 02	P06	
					70	7	3			COMMANDS MONITOR AMPLIFIER	P07	
					70	7	4			COMMANDS MONITOR AMPLIFIER	P07	
					71	2	3			FROM GRP70, ELM07	P01	
					71	2	4			FROM GRP70, ELM07	P01	
					81	4	3			PRESS ASSEMBLY SENSOR	P01	
					81	4	4			PRESS ASSEMBLY SENSOR	P01	
					82	1	3			TO TO PERIPHERY DRIVER	P01	
					82	1	4			TO TO PERIPHERY DRIVER	P01	
					82	3	3			TO TAPE MOVE SENSOR, LEFT	P02	
					82	3	4			TO TAPE MOVE SENSOR, LEFT	P02	
					82	4	3			TO SPOOLING MOTOR TACHO SENSOR L.P03		
					82	4	4			TO SPOOLING MOTOR TACHO SENSOR L.P03		
					83	1	3			TO TO PERIPHERY DRIVER	P01	
					83	1	4			TO TO PERIPHERY DRIVER	P01	
					83	3	3			TO TAPE MOVE SENSOR, RIGHT	P02	
					83	3	4			TO TAPE MOVE SENSOR, RIGHT	P02	
					83	4	3			TO SPOOLING MOTOR TACHO SENSOR R.P03		
					83	4	4			TO SPOOLING MOTOR TACHO SENSOR R.P03		
					85	1	3				P01	
					85	1	4				P01	
					87	2	3			CONN. TACHO SENSOR (S 2000 ONLY)	P03	
					87	2	4			CONN. TACHO SENSOR (S 2000 ONLY)	P03	
					88	2	3			CONN. TACHO SENSOR (S 2000 ONLY)	P03	
					88	2	4			CONN. TACHO SENSOR (S 2000 ONLY)	P03	
					90	1	12			HEAD BLOCK CONNECTOR	P01	
+ 5V					84	1	9		F	FROM GRP85, ELM02	J01	
					85	2	9		M	TO GRP84, ELM01	P02	
+CAPMUT	2				7	7	3		L	RECTIFIER	D03	70.01.0231
	2				7	11	1		L	CAPACITOR	C07	59.26.7103
	2				7	12	7		M	CONNECTOR TO GRP30, ELM01	P01	
	2				19	1	24		F	FROM GRP30, ELM02	J01	
	2				19	2	24		M	TO GRP20, ELM10	P01	
					20	10	24		F	FROM STABILIZER GRP30, ELM02	J01	
					20	12	1			FUSE FAILURE DETECTOR (GRP59)	P11	
					20	12	2			FUSE FAILURE DETECTOR (GRP59)	P11	
	2				20	21	5		U	WIRE FIELD, TO CONN. GRP20, ELM67		1.811.898.00
	9				20	21	5		U	WIRE FIELD, TO CONN. GRP20, ELM67		1.811.898.00
	9				20	67	3		F	CONNECTOR TO GRP85, ELM03	P17	1.811.898.00
	2				20	67	6		F	CONNECTOR TO GRP85, ELM03	P17	1.811.898.00
					30	1	7		F	DC INPUT (FROM GRP07, ELM12)	J01	
					30	2	24		M	OUTPUT (TO GRP20, ELM10)	P01	
					59	1	1			FROM GRP20, ELM12	P01	
					59	1	2			FROM GRP20, ELM12	P01	
					85	3	3		M	SUPPLY (FROM GRP20, ELM72)	P03	
					85	3	6		M	SUPPLY (FROM GRP20, ELM72)	P03	
+PSVTMOT					8	3	1		F	DC OUTPUT		
	2				8	3	4		F	DC OUTPUT		
					8	6	1		U	WIRE FIELD, FROM RECTIFIERS		
	2				9	2	3		L	RECTIFIER		

***** WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 62 *
 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF	2			9	3	1			L	CAPACITOR		
+PSVTMOT	2			11	1	1			M	FROM GRP08, ELM02		
	2			11	1	4			M	FROM GRP08, ELM02		
	2			11	2	4			F	TO GRP31, ELM01 (DRIVE AMP. LEFT)		
	2			11	3	4			F	TO GRP32, ELM01 (DRIVE AMP. RIGHT)		
				31	1	4			M	SUPPLY (FROM GRP08, ELM02)	J01	
				32	1	4			M	SUPPLY (FROM GRP08, ELM02)	J01	
+REMSUP	8			19	1	16			F	FROM GRP30, ELM02	J01	
	8			19	2	16			M	TO GRP20, ELM10	P01	
				20	5	5				PARALLEL REMOTE IF (GRP35)	P05	
				20	5	6				PARALLEL REMOTE IF (GRP35)	P05	
				20	10	16			F	FROM STABILIZER GRP30, ELM02	J01	
				30	2	16			M	OUTPUT (TO GRP20, ELM10)	P01	
				33	1	3				FROM GRP35, ELM01	P01	
				33	2	8				TO GRP34, ELM01	P02	
				34	1	9			B	CONN. AUTOLOCATOR, REMOTE TIMER	J01	
				35	1	3				TO GRP33, ELM01	P01	
				35	2	5				FROM GRP20, ELM05	P02	
				35	2	6				FROM GRP20, ELM05	P02	
+STABIN	2			7	5	3			L	RECTIFIER	D01	70.01.0231
	2			7	8	1			L	CAPACITOR	C04	59.26.7103
	2			7	9	1			L	CAPACITOR	C05	59.26.7103
	2			7	12	1			M	CONNECTOR TO GRP30, ELM01	P01	
	2			7	12	4			M	CONNECTOR TO GRP30, ELM01	P01	
				30	1	1			F	DC INPUT (FROM GRP07, ELM12)	J01	
				30	1	4			F	DC INPUT (FROM GRP07, ELM12)	J01	
+STABSNS	3			19	1	17			F	FROM GRP30, ELM02	J01	
	3			19	2	17			M	TO GRP20, ELM10	P01	
				20	10	17			F	FROM STABILIZER GRP30, ELM02	J01	
				20	12	7				FUSE FAILURE DETECTOR (GRP59)	P11	
				20	12	8				FUSE FAILURE DETECTOR (GRP59)	P11	
				30	2	17			M	OUTPUT (TO GRP20, ELM10)	P01	
				59	1	7				FROM GRP20, ELM12	P01	
				59	1	8				FROM GRP20, ELM12	P01	
+UCOMP				8	2	3				CONN. SUPPLY CONTROL (GRP25, ELM02)		
				8	2	7				CONN. SUPPLY CONTROL (GRP25, ELM02)		
	2			14	1	3			N	FROM GRP08, ELM03		
	2			14	2	3			N	TO GRP25, ELM02		
				25	2	3				FROM GRP08, ELM03	J02	
+0.0SENS	0			19	1	22			F	FROM GRP30, ELM02	J01	
	0			19	2	22			M	TO GRP20, ELM10	P01	
				20	10	22			F	FROM STABILIZER GRP30, ELM02	J01	
				30	2	22			M	OUTPUT (TO GRP20, ELM10)	P01	
+10VREF				25	7	34				FROM GRP26, ELM01	P02	
				26	1	34			L	TO GRP25, ELM07/GRP27, ELM03		
				27	3	34				FROM GRP26, ELM01	P03	

***** WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 63 *
 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
+15.0	4			10	1	8			U	1.811.510.81 + 82 ONLY		
	0			10	2	12			M	1.811.510.81 + 82 ONLY		
	2			19	1	11			F	FROM GRP30, ELM02	J01	
	2			19	2	11			M	TO GRP20, ELM10	P01	
				20	1	5				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
				20	7	5				VU-METER PANEL, EXTERNAL	P07	
				20	8	5				VU-METER PANEL, EXTERNAL	P08	
				20	9	5				MONITOR UNIT, INTERN	P09	
				20	10	11			F	FROM STABILIZER GRP30, ELM02	J01	
				20	11	12			F	SYNCHRONIZER (SUPPLY)	P10	
				20	12	14				FUSE FAILURE DETECTOR (GRP59)	P11	
	2			20	20	14			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	2			20	20	15			U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	2			20	29	7			U	WIRE FIELD, IN/OUT CH 1 + SUPPLY		
				20	38	5				PAR. CONT. INT. SYNCHRONIZER	P12	
				20	41	18				CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
				20	42	18				CAPSTAN CONTROL UNIT	J06	1.820.764.00
				20	43	15A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	43	15B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	18				MP-UNIT MASTER	J08	1.811.786.00
				20	45	18				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	15A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				20	46	15B				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				20	47	22				TIME CODE WRITE/READ UNIT	J11	1.820.721.81
				20	48	22				TIME CODE DELAY UNIT	J12	1.820.722.81
				20	49	22				HF-DRIVER, CH 1	J13	1.820.713.00
				20	50	22				RECORD AMPLIFIER, CH 1	J14	1.820.712.81
				20	51	22				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
				20	52	22				LINE AMPLIFIER, CH 1	J16	1.820.714.81
				20	53	22				MONO-STEREO-SWITCH	J17	1.820.720.00
				20	54	22				HF-DRIVER, CH 2	J18	1.820.713.00
				20	55	22				RECORD AMPLIFIER, CH 2	J19	1.820.712.81
				20	56	22				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
				20	57	22				LINE AMPLIFIER, CH 2	J21	1.820.714.81
	2			20	65	20			F	CONNECTOR TO GRP25, ELM01	P15	
	2			20	66	1			F	CONNECTOR TO GRP27, ELM04	P16	
	2			20	80	13			B	CONN. HEAD BLOCK ASSEMBLY		
				24	1	5				TO GRP31, ELM02	P02	
				24	2	5				TO GRP32, ELM02	P03	
				24	3	5				FROM GRP26, ELM02	P01	
				24	3	6				FROM GRP26, ELM02	P01	
				25	1	20			M	SUPPLY + SOLENOIDS	P07	
				25	3	5				TAPE TRANSPARENT	P08	
				25	4	5				USER	P06	
				25	5	5				TAPE TENSION SENSOR, LEFT	P04	
				25	6	5				TAPE TENSION SENSOR, RIGHT	P03	
				25	7	5				FROM GRP26, ELM01	P02	
				25	7	6				FROM GRP26, ELM01	P02	
				25	8	5				FROM GRP 26, ELM02	P01	
				25	8	6				FROM GRP 26, ELM02	P01	
				26	1	5			L	TO GRP25, ELM07/GRP27, ELM03		
				26	1	6			L	TO GRP25, ELM07/GRP27, ELM03		
				26	2	5			L	TO GRP24, ELM03/GRP25, ELM08		
				26	2	6			L	TO GRP24, ELM03/GRP25, ELM08		
				27	3	5				FROM GRP26, ELM01	P03	

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * PAGE 64 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *****

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF					27	3	6			FROM GRP26, ELM01	P03	
+15.0					27	4	1		M	SUPPLY (FROM GRP20, ELM20)	J01	
					27	5	3			CONNECTOR RS 232 (SERVICE)	J02	
					30	2	11		M	OUTPUT (TO GRP20, ELM10)	P01	
					31	2	5			FROM GRP24, ELM01	P01	
					32	2	5			FROM GRP24, ELM02	P01	
					36	1	5			OUTPUT TO VU-PANEL	P01	
					36	2	5			INPUT FROM BASIS BOARD	P02	
					43	2	3			CONTROL CONN., FROM GRP20, ELM07		
					43	12	3			CABLE TO GRP70, ELM01		
					58	1	5			FROM B. BOARD TAPE DECK, ELM 19	P01	
					58	2	5			TO VU-METER PANEL	P02	
					59	1	14			FROM GRP20, ELM12	P01	
					60	2	5			FROM GRP20, ELM09	P01	
					70	1	5			FROM GRP43, ELM12	P01	
					70	2	5			RESERVE	P02	
					70	3	5			RESERVE	P03	
					70	4	5			COMMANDS CH 03	P04	
					70	5	5			COMMANDS CH 01	P05	
					70	6	5			COMMANDS CH 02	P06	
					70	7	5			COMMANDS MONITOR AMPLIFIER	P07	
					71	2	5			FROM GRP70, ELM07	P01	
					82	1	5			TO TO PERIPHERY DRIVER	P01	
					83	1	5			TO TO PERIPHERY DRIVER	P01	
					84	1	6		F	FROM GRP85, ELM02	J01	
					85	1	5				P01	
					85	2	6		M	TO GRP84, ELM01	P02	
	2				90	1	13		A	HEAD BLOCK CONNECTOR	P01	
	2				90	2	1		L	REPRODUCE PREAMPLIFIER		
+15.JT	2				58	3	1			TO MECHANICAL TIMER	P03	
+24.0	7				10	3	1		L	1.811.510.83		
	7				19	1	15		F	FROM GRP30, ELM02	J01	
	7				19	2	15		M	TO GRP20, ELM10	P01	
					20	4	5			TAPE DECK DISPLAY DRIVER	P04	
					20	4	6			TAPE DECK DISPLAY DRIVER	P04	
					20	7	24			VU-METER PANEL, EXTERNAL	P07	
					20	8	24			VU-METER PANEL, EXTERNAL	P08	
					20	10	15		F	FROM STABILIZER GRP30, ELM02	J01	
					20	12	4			FUSE FAILURE DETECTOR (GRP59)	P11	
	7				20	20	16		U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	7				20	65	3		F	CONNECTOR TO GRP25, ELM01	P15	
	7				20	65	6		F	CONNECTOR TO GRP25, ELM01	P15	
	7				20	65	7		F	CONNECTOR TO GRP25, ELM01	P15	
	7				20	65	10		F	CONNECTOR TO GRP25, ELM01	P15	
	7				20	65	11		F	CONNECTOR TO GRP25, ELM01	P15	
	7				20	65	14		F	CONNECTOR TO GRP25, ELM01	P15	
	7				20	65	15		F	CONNECTOR TO GRP25, ELM01	P15	
	7				20	65	18		F	CONNECTOR TO GRP25, ELM01	P15	
	7				20	65	19		F	CONNECTOR TO GRP25, ELM01	P15	
	7				20	68	1		X	TO GRP80, ELM01		1.811.898.00
	7				20	69	1		X	TO GRP81, ELM01		1.811.898.00
	7				20	70	1		X	TO GRP81, ELM02		1.811.898.00

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *****

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF	7				20	71	1		X	TO GRP81, ELM03		1.811.898.00
+24.0	7				20	72	1		X	TO GRP82, ELM05		1.811.898.00
	7				20	73	1		X	TO GRP83, ELM05		1.811.898.00
	7				20	74	1		X	TO GRP86, ELM01		1.811.898.00
	7				20	75	1		X	TO GRP86, ELM02		1.811.898.00
					25	1	3		M	SUPPLY + SOLENOIDS	P07	
					25	1	6		M	SUPPLY + SOLENOIDS	P07	
					25	1	7		M	SUPPLY + SOLENOIDS	P07	
					25	1	10		M	SUPPLY + SOLENOIDS	P07	
					25	1	11		M	SUPPLY + SOLENOIDS	P07	
					25	1	14		M	SUPPLY + SOLENOIDS	P07	
					25	1	15		M	SUPPLY + SOLENOIDS	P07	
					25	1	18		M	SUPPLY + SOLENOIDS	P07	
					25	1	19		M	SUPPLY + SOLENOIDS	P07	
					25	4	15			USER	P06	
					25	4	16			USER	P06	
					30	2	15		M	OUTPUT (TO GRP20, ELM10)	P01	
					36	1	24			OUTPUT TO VU-PANEL	P01	
					36	2	24			INPUT FROM BASIS BOARD	P02	
					36	3	28			CONNECTION REMOTE PANEL	P03	
					36	4	33			CHANNEL REMOTE CONNECTOR	J04	
					43	2	25			CONTROL CONN., FROM GRP20, ELM07		
					43	12	25			CABLE TO GRP70, ELM01		
					52	1	5			FROM GRP20, ELM04	P01	
					52	1	6			FROM GRP20, ELM04	P01	
					59	1	4			FROM GRP20, ELM12	P01	
					70	1	24			FROM GRP43, ELM12	P01	
					70	2	24			RESERVE	P02	
					70	3	16			RESERVE	P03	
					70	4	16			COMMANDS CH 03	P04	
					70	5	16			COMMANDS CH 01	P05	
					70	6	16			COMMANDS CH 02	P06	
					80	1	1			LIFT SOLENOID		
					81	1	1			PRESS SOLENOID A		
					81	2	1			PRESS SOLENOID B		
					81	3	1			STAND BY SOLENOID		
					82	5	1			HOLD SOLENOID, LEFT		
					83	5	1			HOLD SOLENOID, RIGHT		
					86	1	1		M	BRAKE SOLENOID		
					86	2	1		M	EDIT SOLENOID		
+24.0REM					34	2	25		B	CONNECTOR SYNCHRONIZER	J02	
					34	3	25		B	CONN. PARALLEL REMOTE CONTRL	J03	
					35	3	24			TO CONNECTOR SYNCHRONIZER	P03	
					35	4	24			TO CONN. PARALLEL REMOTE CONTR.	P04	
+26.0	1				19	1	20		F	FROM GRP30, ELM02	J01	
	1				19	2	20		M	TO GRP20, ELM10	P01	
					20	10	20		F	FROM STABILIZER GRP30, ELM02	J01	
					20	12	15			FUSE FAILURE DETECTOR (GRP59)	P11	
					20	20	18			WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
					30	2	20		M	OUTPUT (TO GRP20, ELM10)	P01	
					59	1	15			FROM GRP20, ELM12	P01	
+5.0L	2				82	2	2		N	TAPE END SWITCH, LEFT		

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 66 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
+5.0R	2		83	2	2				N	TAPE END SWITCH, RIGHT		
+5.6SENS	3		19	1	3				F	FROM GRP30, ELM02	J01	
	3		19	2	3				M	TO GRP20, ELM10	P01	
			20	10	3				F	FROM STABILIZER GRP30, ELM02	J01	
			20	12	9					FUSE FAILURE DETECTOR (GRP59)	P11	
			20	12	10					FUSE FAILURE DETECTOR (GRP59)	P11	
			30	2	3				M	OUTPUT (TO GRP20, ELM10)	P01	
-PSVTMOT			8	3	3					DC OUTPUT		
			8	3	6				F	DC OUTPUT		
	6		8	6	3				U	WIRE FIELD, FROM RECTIFIERS		
	6		9	1	4				L	RECTIFIER		
	6		9	4	2				L	CAPACITOR		
	6		11	1	3				M	FROM GRP08, ELM02		
	6		11	1	6				M	FROM GRP08, ELM02		
	6		11	2	6				F	TO GRP31, ELM01 (DRIVE AMP. LEFT)		
	6		11	3	6				F	TO GRP32, ELM01 (DRIVE AMP. RIGHT)		
			31	1	6				M	SUPPLY (FROM GRP08, ELM02)	J01	
			32	1	6				M	SUPPLY (FROM GRP08, ELM02)	J01	
-STABIN	6		7	6	4				L	RECTIFIER	D02	70.01.0231
	6		7	10	2				L	CAPACITOR	C06	59.26.7103
	6		7	12	6				M	CONNECTOR TO GRP30, ELM01	P01	
			30	1	6				F	DC INPUT (FROM GRP07, ELM12)	J01	
-STABSNS	5		19	1	18				F	FROM GRP30, ELM02	J01	
	5		19	2	18				M	TO GRP20, ELM10	P01	
			20	10	18				F	FROM STABILIZER GRP30, ELM02	J01	
			20	12	5					FUSE FAILURE DETECTOR (GRP59)	P11	
			30	2	18				M	OUTPUT (TO GRP20, ELM10)	P01	
			59	1	5					FROM GRP20, ELM12	P01	
-UCOMP			8	2	1					CONN. SUPPLY CONTROL (GRP25, ELM02)		
			8	2	9					CONN. SUPPLY CONTROL (GRP25, ELM02)		
	6		14	1	1				N	FROM GRP08, ELM03		
	6		14	2	1				N	TO GRP25, ELM02		
			25	2	1					FROM GRP08, ELM03	J02	
-10VREF			25	7	37					FROM GRP26, ELM01	P02	
			26	1	37				L	TO GRP25, ELM07/GRP27, ELM03		
			27	3	37					FROM GRP26, ELM01	P03	
-15.0	6		19	1	12				F	FROM GRP30, ELM02	J01	
	6		19	2	12				M	TO GRP20, ELM10	P01	
			20	1	6					CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
			20	7	6					VU-METER PANEL, EXTERNAL	P07	
			20	8	6					VU-METER PANEL, EXTERNAL	P08	
			20	9	6					MONITOR UNIT, INTERN	P09	
			20	10	12				F	FROM STABILIZER GRP30, ELM02	J01	
			20	11	9				F	SYNCHRONIZER (SUPPLY)	P10	
			20	12	13					FUSE FAILURE DETECTOR (GRP59)	P11	
	6		20	20	9				U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	6		20	20	10				U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
	6		20	30	2				U	WIRE FIELD, SUPPLY		

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<- CONT.OF			20	38	6					PAR. CONT. INT. SYNCHRONIZER	P12	
-15.0			20	41	22					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
			20	42	22					CAPSTAN CONTROL UNIT	J06	1.820.764.00
			20	43	18A					MASTER SERIAL INTERFACE	J07	1.820.753.00
			20	43	18B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			20	45	22					SMPTE/EBU INTERFACE	J09	1.820.751.00
			20	46	17A					MASTER PERIPHERY CONTR.	J10	1.820.728.00
			20	46	17B					MASTER PERIPHERY CONTR.	J10	1.820.728.00
			20	47	23					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
			20	48	23					TIME CODE DELAY UNIT	J12	1.820.722.81
			20	49	23					HF-DRIVER, CH 1	J13	1.820.713.00
			20	50	23					RECORD AMPLIFIER, CH 1	J14	1.820.712.81
			20	51	23					REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
			20	52	23					LINE AMPLIFIER, CH 1	J16	1.820.714.81
			20	53	23					MONO-STEREO-SWITCH	J17	1.820.720.00
			20	54	23					HF-DRIVER, CH 2	J18	1.820.713.00
			20	55	23					RECORD AMPLIFIER, CH 2	J19	1.820.712.81
			20	56	23					REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
			20	57	23					LINE AMPLIFIER, CH 2	J21	1.820.714.81
	6		20	65	16				F	CONNECTOR TO GRP25, ELM01	P15	
	6		20	66	3				F	CONNECTOR TO GRP27, ELM04	P16	
	6		20	80	14				B	CONN. HEAD BLOCK ASSEMBLY		
			24	3	7					FROM GRP26, ELM02	P01	
			24	3	8					FROM GRP26, ELM02	P01	
			25	1	16				M	SUPPLY + SOLENOIDS	P07	
			25	3	6					TAPE TRANSPARENT	P08	
			25	4	6					USER	P06	
			25	5	6					TAPE TENSION SENSOR, LEFT	P04	
			25	6	6					TAPE TENSION SENSOR, RIGHT	P03	
			25	7	7					FROM GRP26, ELM01	P02	
			25	7	8					FROM GRP26, ELM01	P02	
			25	8	7					FROM GRP 26, ELM02	P01	
			25	8	8					FROM GRP 26, ELM02	P01	
			26	1	7				L	TO GRP25, ELM07/GRP27, ELM03		
			26	1	8				L	TO GRP25, ELM07/GRP27, ELM03		
			26	2	7				L	TO GRP24, ELM03/GRP25, ELM08		
			26	2	8				L	TO GRP24, ELM03/GRP25, ELM08		
			27	3	7					FROM GRP26, ELM01	P03	
			27	3	8					FROM GRP26, ELM01	P03	
			27	4	3				M	SUPPLY (FROM GRP20, ELM20)	J01	
			27	5	2					CONNECTOR RS 232 (SERVICE)	J02	
			30	2	12				M	OUTPUT (TO GRP20, ELM10)	P01	
			36	1	6					OUTPUT TO VU-PANEL	P01	
			36	2	6					INPUT FROM BASIS BOARD	P02	
			43	2	16					CONTROL CONN., FROM GRP20, ELM07		
			43	12	16					CABLE TO GRP70, ELM01		
			58	1	6					FROM B. BOARD TAPE DECK, ELM 19	P01	
			58	2	6					TO VU-METER PANEL	P02	
			59	1	13					FROM GRP20, ELM12	P01	
			60	2	6					FROM GRP20, ELM09	P01	
			70	1	6					FROM GRP43, ELM12	P01	
			70	2	6					RESERVE	P02	
			70	3	6					RESERVE	P03	
			70	4	6					COMMONS CH 03	P04	

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 68 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF -15.0										COMMANDS CH 01 P05 COMMANDS CH 02 P06 COMMANDS MONITOR AMPLIFIER P07 FROM GRP70, ELM07 P01 TO TO PERIPHERY DRIVER P01 TO TO PERIPHERY DRIVER P01 TO GRP84, ELM01 P02 HEAD BLOCK CONNECTOR P01 REPRODUCE PREAMPLIFIER		
-26.0										FROM GRP30, ELM02 J01 TO GRP20, ELM10 P01 FROM STABILIZER GRP30, ELM02 J01 FUSE FAILURE DETECTOR (GRP59) P11 WIRE FIELD, TO CONN. GRP20, ELM65/66 1.811.898.00 OUTPUT (TO GRP20, ELM10) P01 FROM GRP20, ELM12 P01		
ACPWE-A1	7 7 6 6			6 7 7 7	3 1 1 2	17 2C 2D 1			Y K K L	SECONDARY 1 DISTRIBUTOR DISTRIBUTOR FUSE, POSITIVE SUPPLY F..		1.811.523.00 53.03.0106
ACPWE-A2	8 8			6 7	3 1	18 2B			Y K	SECONDARY 1 DISTRIBUTOR		1.811.523.00
ACPWE-A3	0 0 0 0			6 6 7 7	3 4 3 3	20 20 1A 18			Y Y L L	SECONDARY 1 SECONDARY 2 FUSE, NEGATIVE SUPPLY F.. FUSE, NEGATIVE SUPPLY F..		1.811.523.00 1.811.524.00 53.03.0106 53.03.0106
ACPWE-B1	2 5 2 5 5 5			6 7 7 7 7 7	4 1 1 1 5 12	12 3A 3B 3D 2 12			Y K K K L F	SECONDARY 2 DISTRIBUTOR DISTRIBUTOR DISTRIBUTOR RECTIFIER D01 CONNECTOR TO GRP30, ELM01 P01 DC INPUT (FROM GRP07, ELM12) J01		1.811.524.00 70.01.0231
ACPWE-B2	1 1			6 7	4 1	11 3C			Y K	SECONDARY 2 DISTRIBUTOR		1.811.524.00
ACPWE-B3	9 9 9 9			6 6 7 7	3 4 6 6	9 9 2A 2B			Y Y L L	SECONDARY 1 SECONDARY 2 RECTIFIER D02 RECTIFIER D02		1.811.523.00 1.811.524.00 70.01.0231 70.01.0231
ACPWE-C1	0 0			6 6	3 4	12 17			Y Y	SECONDARY 1 SECONDARY 2		1.811.523.00 1.811.524.00
ACPWE-C2	0 0			6 6	3 4	11 18			Y Y	SECONDARY 1 SECONDARY 2		1.811.523.00 1.811.524.00

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
ACPWE-D1	8 8 9 8 9			7 7 7 7 7	1 1 1 2 5	1A 1B 1D 2 1			K K K L L	DISTRIBUTOR DISTRIBUTOR DISTRIBUTOR FUSE, POSITIVE SUPPLY F.. RECTIFIER D01		53.03.0106 70.01.0231
									M	CONNECTOR TO GRP30, ELM01 P01 DC INPUT (FROM GRP07, ELM12) J01		
ACPWE-D3	5 5			7 7	3 6	2 1			L L	FUSE, NEGATIVE SUPPLY F.. RECTIFIER D02		53.03.0106 70.01.0231
ACPWM-A1	5 5 3			6 6 8	3 6 1	15 9 9			Y F M	SECONDARY 1 TO GRP08, ELM06 P01 AC INPUT		1.811.523.00
									L	FUSE, NEGATIVE MOTOR SUPPLY		
ACPWM-A2	6 6 3			6 6 8	3 6 1	16 6 6			Y F M	SECONDARY 1 TO GRP08, ELM06 P01 AC INPUT		1.811.523.00
									U	WIRE FIELD TO FUSES GRP09, ELM05/06		
ACPWM-A3	9 9			6 7	3 4	19 1			Y L	SECONDARY 1 FUSE, CAPSTAN MOTOR SUPPLY F..		1.811.523.00
ACPWM-B1	4 4			6 6	4 6	14 8			Y F	SECONDARY 2 TO GRP08, ELM06 P01		1.811.524.00
									M	AC INPUT		
ACPWM-B2	3 3 3 7			6 6 8 9	4 6 5 5	13 5 3 1			Y F M U L	SECONDARY 2 TO GRP08, ELM06 P01 AC INPUT WIRE FIELD TO FUSES GRP09, ELM05/06 FUSE, POSITIVE MOTOR SUPPLY		1.811.524.00
ACPWM-B3	0 0			6 7	4 7	10 2			Y L	SECONDARY 2 RECTIFIER D03		1.811.524.00 70.01.0231
ACPWM-C1	0 0			6 6	3 4	14 15			Y Y	SECONDARY 1 SECONDARY 2		1.811.523.00 1.811.524.00
ACPWM-C2	0 0			6 6	3 4	13 16			Y Y	SECONDARY 1 SECONDARY 2		1.811.523.00 1.811.524.00
ACPWM-C3	0 0			6 6	3 4	10 19			Y Y	SECONDARY 1 SECONDARY 2		1.811.523.00 1.811.524.00
ACPWM-D1	5 5			8 9	5 5	1 2			U L	WIRE FIELD TO FUSES GRP09, ELM05/06 FUSE, POSITIVE MOTOR SUPPLY		
ACPWM-D2	1 1			8 9	5 6	2 2			U L	WIRE FIELD TO FUSES GRP09, ELM05/06 FUSE, NEGATIVE MOTOR SUPPLY		
ACPWM-D3	1 1			7 7	4 7	2 1			L L	FUSE, CAPSTAN MOTOR SUPPLY F.. RECTIFIER D03		70.01.0231

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 70 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
ACPWM-E1	4				8	7	2		U	WIRE FIELD, TO RECTIFIERS		
					9	2	1		L	RECTIFIER		
ACPWM-E2	9				8	7	4		U	WIRE FIELD, TO RECTIFIERS		
	9				9	1	1		L	RECTIFIER		
ACPWM-F1	4				8	7	1		U	WIRE FIELD, TO RECTIFIERS		
	4				9	2	2		L	RECTIFIER		
ACPWM-F2	9				8	7	3		U	WIRE FIELD, TO RECTIFIERS		
	9				9	1	2		L	RECTIFIER		
AFCSW-01					20	49	10			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	15			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
AFCSW-02					20	54	10			HF-DRIVER, CH 2	J18	1.820.713.00
					20	55	15			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
AN-CSPDC					20	1	7			CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
					20	41	16			CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					85	1	7				P01	
AN-R-L	1				12	1	4		M	FROM GRP31, ELM03 (DRIVE AMP. LEFT)		
	1				12	2	6		F	TO SPOOLING MOTOR, LEFT (GRP87)		
					31	3	1		F	TO SPOOLING MOTOR LEFT	P02	
					31	3	4		F	TO SPOOLING MOTOR LEFT	P02	
					87	1	4		M	CONNECTOR SPOOLING MOTOR LEFT	J01	
AN-R-R	5				13	1	4		M	FROM GRP32, ELM03 (DRIVE AMP. RIGHT)		
	5				13	2	4		F	TO SPOOLING MOTOR, RIGHT (GRP88)		
					32	3	1		F	TO SPOOLING MOTOR RIGHT	P02	
					32	3	4		F	TO SPOOLING MOTOR RIGHT	P02	
					88	1	4		M	CONNECTOR SPOOLING MOTOR RIGHT	J01	
AN-S-L	0				12	1	5		M	FROM GRP31, ELM03 (DRIVE AMP. LEFT)		
	0				12	2	5		F	TO SPOOLING MOTOR, LEFT (GRP87)		
					31	3	2		F	TO SPOOLING MOTOR LEFT	P02	
					31	3	5		F	TO SPOOLING MOTOR LEFT	P02	
					87	1	5		M	CONNECTOR SPOOLING MOTOR LEFT	J01	
AN-S-R	0				13	1	5		M	FROM GRP32, ELM03 (DRIVE AMP. RIGHT)		
	0				13	2	5		F	TO SPOOLING MOTOR, RIGHT (GRP88)		
					32	3	2		F	TO SPOOLING MOTOR RIGHT	P02	
					32	3	5		F	TO SPOOLING MOTOR RIGHT	P02	
					88	1	5		M	CONNECTOR SPOOLING MOTOR RIGHT	J01	
AN-T-L	7				12	1	6		M	FROM GRP31, ELM03 (DRIVE AMP. LEFT)		
	7				12	2	4		F	TO SPOOLING MOTOR, LEFT (GRP87)		
					31	3	3		F	TO SPOOLING MOTOR LEFT	P02	
					31	3	6		F	TO SPOOLING MOTOR LEFT	P02	
					87	1	6		M	CONNECTOR SPOOLING MOTOR LEFT	J01	
AN-T-R	8				13	1	6		M	FROM GRP32, ELM03 (DRIVE AMP. RIGHT)		
	8				13	2	6		F	TO SPOOLING MOTOR, RIGHT (GRP88)		
					32	3	3		F	TO SPOOLING MOTOR RIGHT	P02	

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF					32	3	6		F	TO SPOOLING MOTOR RIGHT	P02	
AN-T-R					88	1	6		M	CONNECTOR SPOOLING MOTOR RIGHT	J01	
AN-TTL					24	3	26			FROM GRP26, ELM02	P01	
					25	5	11			TAPE TENSION SENSOR, LEFT	P04	
					25	8	26			FROM GRP 26, ELM02	P01	
					26	2	26		L	TO GRP24, ELM03/GRP25, ELM08		
					82	1	11			TO TD PERIPHERY DRIVER	P01	
AN-TTR					24	3	24			FROM GRP26, ELM02	P01	
					25	6	11			TAPE TENSION SENSOR, RIGHT	P03	
					25	8	24			FROM GRP 26, ELM02	P01	
					26	2	24		L	TO GRP24, ELM03/GRP25, ELM08		
					83	1	11			TO TD PERIPHERY DRIVER	P01	
AN-VML					24	3	21			FROM GRP26, ELM02	P01	
					25	8	21			FROM GRP 26, ELM02	P01	
					26	2	21		L	TO GRP24, ELM03/GRP25, ELM08		
AN-VMR					24	3	23			FROM GRP26, ELM02	P01	
					25	8	23			FROM GRP 26, ELM02	P01	
					26	2	23		L	TO GRP24, ELM03/GRP25, ELM08		
ANM-SH1					51	1	10			FROM GRP52, ELM03		
					51	2	1			WIRE FIELD POTENTIOMETER		
					52	3	10			CONNECTOR PUSHBUTTON ASSEMBLY	P02	
ANM-SH2					51	1	9			FROM GRP52, ELM03		
					51	2	2			WIRE FIELD POTENTIOMETER		
					52	3	9			CONNECTOR PUSHBUTTON ASSEMBLY	P02	
ANM-SH3					51	1	8			FROM GRP52, ELM03		
					51	2	3			WIRE FIELD POTENTIOMETER		
					52	3	8			CONNECTOR PUSHBUTTON ASSEMBLY	P02	
BIAFB-01					20	49	1			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	3			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
BIAFB-02					20	54	1			HF-DRIVER, CH 2	J18	1.820.713.00
					20	55	3			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
BIASA-01					20	49	5			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	6			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
BIASA-02					20	54	5			HF-DRIVER, CH 2	J18	1.820.713.00
					20	55	6			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
BIASB-01					20	49	6			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	7			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
BIASB-02					20	54	6			HF-DRIVER, CH 2	J18	1.820.713.00
					20	55	7			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
BIASC-01					20	49	7			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	8			RECORD AMPLIFIER, CH 1	J14	1.820.712.81

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 72 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
BIASC-02					20 54 7					HF-DRIVER, CH 2	J18	1.820.713.00
					20 55 8					RECORD AMPLIFIER, CH 2	J19	1.820.712.81
BR-FADRY					34 3 8			B		CONN. PARALLEL REMOTE CONTROL	J03	
					35 4 15					TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-FORW					34 2 3			B		CONNECTOR SYNCHRONIZER	J02	
					34 3 3			B		CONN. PARALLEL REMOTE CONTROL	J03	
					35 3 5					TO CONNECTOR SYNCHRONIZER	P03	
					35 4 5					TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-INPTC					36 3 24					CONNECTION REMOTE PANEL	P03	
					36 4 31					CHANNEL REMOTE CONNECTOR	J04	
BR-INP01					36 3 14					CONNECTION REMOTE PANEL	P03	
					36 4 26					CHANNEL REMOTE CONNECTOR	J04	
BR-INP02					36 3 21					CONNECTION REMOTE PANEL	P03	
					36 4 11					CHANNEL REMOTE CONNECTOR	J04	
BR-LOCST					34 3 7			B		CONN. PARALLEL REMOTE CONTROL	J03	
					35 4 13					TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-PLAY					34 2 15			B		CONNECTOR SYNCHRONIZER	J02	
					34 3 15			B		CONN. PARALLEL REMOTE CONTROL	J03	
					35 3 4					TO CONNECTOR SYNCHRONIZER	P03	
					35 4 4					TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-REATC					36 3 25					CONNECTION REMOTE PANEL	P03	
					36 4 13					CHANNEL REMOTE CONNECTOR	J04	
BR-READ1					36 3 15					CONNECTION REMOTE PANEL	P03	
					36 4 8					CHANNEL REMOTE CONNECTOR	J04	
BR-READ2					36 3 18					CONNECTION REMOTE PANEL	P03	
					36 4 28					CHANNEL REMOTE CONNECTOR	J04	
BR-REC					34 2 9			B		CONNECTOR SYNCHRONIZER	J02	
					34 3 9			B		CONN. PARALLEL REMOTE CONTROL	J03	
					35 3 17					TO CONNECTOR SYNCHRONIZER	P03	
					35 4 17					TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-RECTC					36 3 22					CONNECTION REMOTE PANEL	P03	
					36 4 30					CHANNEL REMOTE CONNECTOR	J04	
BR-REC01					36 3 12					CONNECTION REMOTE PANEL	P03	
					36 4 25					CHANNEL REMOTE CONNECTOR	J04	
BR-REC02					36 3 19					CONNECTION REMOTE PANEL	P03	
					36 4 10					CHANNEL REMOTE CONNECTOR	J04	
BR-REPTC					36 3 26					CONNECTION REMOTE PANEL	P03	
					36 4 32					CHANNEL REMOTE CONNECTOR	J04	
BR-REPO1					36 3 16					CONNECTION REMOTE PANEL	P03	
					36 4 27					CHANNEL REMOTE CONNECTOR	J04	

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
BR-REPO2					36 3 23					CONNECTION REMOTE PANEL	P03	
					36 4 12					CHANNEL REMOTE CONNECTOR	J04	
BR-REW					34 2 2			B		CONNECTOR SYNCHRONIZER	J02	
					34 3 2			B		CONN. PARALLEL REMOTE CONTROL	J03	
					35 3 3					TO CONNECTOR SYNCHRONIZER	P03	
					35 4 3					TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-STOP					34 2 16			B		CONNECTOR SYNCHRONIZER	J02	
					34 3 16			B		CONN. PARALLEL REMOTE CONTROL	J03	
					35 3 6					TO CONNECTOR SYNCHRONIZER	P03	
					35 4 6					TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-SYNTC					36 3 27					CONNECTION REMOTE PANEL	P03	
					36 4 14					CHANNEL REMOTE CONNECTOR	J04	
BR-SYN01					36 3 17					CONNECTION REMOTE PANEL	P03	
					36 4 9					CHANNEL REMOTE CONNECTOR	J04	
BR-SYN02					36 3 20					CONNECTION REMOTE PANEL	P03	
					36 4 29					CHANNEL REMOTE CONNECTOR	J04	
BR-TCPRS					36 3 29					CONNECTION REMOTE PANEL	P03	
					36 4 15					CHANNEL REMOTE CONNECTOR	J04	
BR-VRSPD					34 2 4			B		CONNECTOR SYNCHRONIZER	J02	
					34 3 4			B		CONN. PARALLEL REMOTE CONTROL	J03	
					35 3 7					TO CONNECTOR SYNCHRONIZER	P03	
					35 4 7					TO CONN. PARALLEL REMOTE CONTR.	P04	
CA-ADR-R					20 46 21B					MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20 47 27					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
					20 48 27					TIME CODE DELAY UNIT	J12	1.820.722.81
					20 49 27					HF-DRIVER, CH 1	J13	1.820.713.00
					20 50 27					RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20 51 27					REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20 52 27					LINE AMPLIFIER, CH 1	J16	1.820.714.81
					20 53 27					MONO-STEREO-SWITCH	J17	1.820.720.00
					20 54 27					HF-DRIVER, CH 2	J18	1.820.713.00
					20 55 27					RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20 56 27					REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20 57 27					LINE AMPLIFIER, CH 2	J21	1.820.714.81
CA-ADR-S					20 46 22B					MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20 47 28					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
					20 48 28					TIME CODE DELAY UNIT	J12	1.820.722.81
					20 49 28					HF-DRIVER, CH 1	J13	1.820.713.00
					20 50 28					RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20 51 28					REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20 52 28					LINE AMPLIFIER, CH 1	J16	1.820.714.81
					20 53 28					MONO-STEREO-SWITCH	J17	1.820.720.00
					20 54 28					HF-DRIVER, CH 2	J18	1.820.713.00
					20 55 28					RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20 56 28					REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20 57 28					LINE AMPLIFIER, CH 2	J21	1.820.714.81

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* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *
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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF CA-DATA4					20	55	35			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56	35			REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57	35			LINE AMPLIFIER, CH 2	J21	1.820.714.81
CA-DATA5					20	46	30B			MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	47	36			TIME CODE WRITE/READ UNIT	J11	1.820.721.81
					20	48	36			TIME CODE DELAY UNIT	J12	1.820.722.81
					20	49	36			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	36			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20	51	36			REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52	36			LINE AMPLIFIER, CH 1	J16	1.820.714.81
					20	53	36			MONO-STEREO-SWITCH	J17	1.820.720.00
					20	54	36			HF-DRIVER, CH 2	J18	1.820.713.00
					20	55	36			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56	36			REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57	36			LINE AMPLIFIER, CH 2	J21	1.820.714.81
CA-DATA6					20	46	31B			MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	47	37			TIME CODE WRITE/READ UNIT	J11	1.820.721.81
					20	48	37			TIME CODE DELAY UNIT	J12	1.820.722.81
					20	49	37			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	37			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20	51	37			REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52	37			LINE AMPLIFIER, CH 1	J16	1.820.714.81
					20	53	37			MONO-STEREO-SWITCH	J17	1.820.720.00
					20	54	37			HF-DRIVER, CH 2	J18	1.820.713.00
					20	55	37			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56	37			REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57	37			LINE AMPLIFIER, CH 2	J21	1.820.714.81
CA-DATA7					20	46	32B			MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	47	38			TIME CODE WRITE/READ UNIT	J11	1.820.721.81
					20	48	38			TIME CODE DELAY UNIT	J12	1.820.722.81
					20	49	38			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	38			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20	51	38			REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52	38			LINE AMPLIFIER, CH 1	J16	1.820.714.81
					20	53	38			MONO-STEREO-SWITCH	J17	1.820.720.00
					20	54	38			HF-DRIVER, CH 2	J18	1.820.713.00
					20	55	38			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56	38			REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57	38			LINE AMPLIFIER, CH 2	J21	1.820.714.81
CA-EQL01					20	51	15			REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52	16			LINE AMPLIFIER, CH 1	J16	1.820.714.81
CA-EQL02					20	56	15			REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57	16			LINE AMPLIFIER, CH 2	J21	1.820.714.81
CA-LSW01					20	51	17			REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52	18			LINE AMPLIFIER, CH 1	J16	1.820.714.81
CA-LSW02					20	56	17			REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57	18			LINE AMPLIFIER, CH 2	J21	1.820.714.81

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
CA-MONO					20	46	13B			MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	53	39			MONO-STEREO-SWITCH	J17	1.820.720.00
CA-RSW01					20	49	18			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	18			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
CA-RSW02					20	54	18			HF-DRIVER, CH 2	J18	1.820.713.00
					20	55	18			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
CA-SAFE					20	46	20B			MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	47	26			TIME CODE WRITE/READ UNIT	J11	1.820.721.81
					20	48	26			TIME CODE DELAY UNIT	J12	1.820.722.81
					20	49	26			HF-DRIVER, CH 1	J13	1.820.713.00
					20	50	26			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20	51	26			REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52	26			LINE AMPLIFIER, CH 1	J16	1.820.714.81
					20	53	26			MONO-STEREO-SWITCH	J17	1.820.720.00
					20	54	26			HF-DRIVER, CH 2	J18	1.820.713.00
					20	55	26			RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56	26			REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57	26			LINE AMPLIFIER, CH 2	J21	1.820.714.81
CA-SYN01					20	51	16			REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52	17			LINE AMPLIFIER, CH 1	J16	1.820.714.81
CA-SYN02					20	56	16			REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57	17			LINE AMPLIFIER, CH 2	J21	1.820.714.81
CPHASE-R	2				84	1	1		F	FROM GRP85, ELM02	J01	
	2				84	4	1		L	STATOR (WIRE FIELD)		
					85	2	1		M	TO GRP84, ELM01	P02	
CPHASE-S	0				84	1	3		F	FROM GRP85, ELM02	J01	
	0				84	4	2		L	STATOR (WIRE FIELD)		
					85	2	3		M	TO GRP84, ELM01	P02	
CPHASE-T	9				84	1	2		F	FROM GRP85, ELM02	J01	
	9				84	4	3		L	STATOR (WIRE FIELD)		
					85	2	2		M	TO GRP84, ELM01	P02	
DCPHR-L					24	1	4			TO GRP31, ELM02	P02	
					31	2	4			FROM GRP24, ELM01	P01	
DCPHR-R					24	2	4			TO GRP32, ELM02	P03	
					32	2	4			FROM GRP24, ELM02	P01	
DCPHT-L					24	1	3			TO GRP31, ELM02	P02	
					31	2	3			FROM GRP24, ELM01	P01	
DCPHT-R					24	2	3			TO GRP32, ELM02	P03	
					32	2	3			FROM GRP24, ELM02	P01	
EQUAL-01					20	50	2			RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20	51	2			REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81

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 * 1.811.000.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/10 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
EQUAL-02					20	55 2				RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56 2				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
ERACS-01					20	49 9				HF-DRIVER, CH 1	J13	1.820.713.00
ERACS-02	7				20	31 1			U	WIRE FIELD, ERASE HEAD CH 2		
	7				20	54 9				HF-DRIVER, CH 2	J18	1.820.713.00
					20	80 45			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 45				HEAD BLOCK CONNECTOR	P01	
ERAHH-TC	0				20	25 2			U	WIRE FIELD, TC HEADS + TC IN/OUT		
	0				20	47 4				TIME CODE WRITE/READ UNIT	J11	1.820.721.81
	3				20	80 25			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 25			A	HEAD BLOCK CONNECTOR	P01	
ERAHH-01	9				20	26 4			U	WIRE FIELD, ERASE HEAD CH 1 + SUPPLY		
	9				20	49 14				HF-DRIVER, CH 1	J13	1.820.713.00
					20	80 38			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 38				HEAD BLOCK CONNECTOR	P01	
ERAHH-02	9				20	31 4			U	WIRE FIELD, ERASE HEAD CH 2		
	9				20	54 14				HF-DRIVER, CH 2	J18	1.820.713.00
					20	80 22			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 22				HEAD BLOCK CONNECTOR	P01	
ERAHL-TC	6				20	25 1			U	WIRE FIELD, TC HEADS + TC IN/OUT		
	6				20	47 5				TIME CODE WRITE/READ UNIT	J11	1.820.721.81
	5				20	80 41			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 41			A	HEAD BLOCK CONNECTOR	P01	
ERAHL-01	6				20	26 2			U	WIRE FIELD, ERASE HEAD CH 1 + SUPPLY		
	6				20	49 12				HF-DRIVER, CH 1	J13	1.820.713.00
	3				20	80 39			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 39			A	HEAD BLOCK CONNECTOR	P01	
ERAHL-02	6				20	31 2			U	WIRE FIELD, ERASE HEAD CH 2		
	6				20	54 12				HF-DRIVER, CH 2	J18	1.820.713.00
	3				20	80 23			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 23			A	HEAD BLOCK CONNECTOR	P01	
ERAHM-01	2				20	26 3			U	WIRE FIELD, ERASE HEAD CH 1 + SUPPLY		
	2				20	49 13				HF-DRIVER, CH 1	J13	1.820.713.00
	5				20	80 40			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 40			A	HEAD BLOCK CONNECTOR	P01	
ERAHM-02	2				20	31 3			U	WIRE FIELD, ERASE HEAD CH 2		
	2				20	54 13				HF-DRIVER, CH 2	J18	1.820.713.00
	5				20	80 24			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 24			A	HEAD BLOCK CONNECTOR	P01	
ERAHO-01	S				20	26 5			U	WIRE FIELD, ERASE HEAD CH 1 + SUPPLY		
	S				20	49 15				HF-DRIVER, CH 1	J13	1.820.713.00
					20	80 37			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 37				HEAD BLOCK CONNECTOR	P01	

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
ERAHO-02	S				20	31 5			U	WIRE FIELD, ERASE HEAD CH 2		
	S				20	54 15				HF-DRIVER, CH 2	J18	1.820.713.00
					20	80 21			B	CONN. HEAD BLOCK ASSEMBLY		
					90	1 21				HEAD BLOCK CONNECTOR	P01	
F-LINE1	1				1	2 1			J	FUSE (LINE)	F01	
	1				3	1 1			J	LINE FILTER		
FAD1					34	3 11			B	CONN. PARALLEL REMOTE CONTROL	J03	
					35	4 21				TO CONN. PARALLEL REMOTE CONTR.	P04	
FAD2					34	3 12			B	CONN. PARALLEL REMOTE CONTROL	J03	
					35	4 23				TO CONN. PARALLEL REMOTE CONTR.	P04	
FRMGND					20	2 1				SMPT/EBU BUS	P06	
					20	6 8				SMPT/EBU BUS	P06	
					20	45 1				SMPT/EBU INTERFACE	J09	1.820.751.00
					20	45 8				SMPT/EBU INTERFACE	J09	1.820.751.00
					46	1 1			B	CONNECTOR SMPT/EBU BUS	J04	
					46	1 9			B	CONNECTOR SMPT/EBU BUS	J04	
					46	2 1			B	CONNECTOR SMPT/EBU BUS	J05	
					46	2 9			B	CONNECTOR SMPT/EBU BUS	J05	
GND	5-4				1	1 3			J	CONNECTOR POWER INPUT	P01	
	5-4				5	1 1			J	EARTH CONTACTS		
	0				5	1 2			J	EARTH CONTACTS		
	0				5	1 3			J	EARTH CONTACTS		
	0				5	1 4			J	EARTH CONTACTS		
	0				5	2 1				EARTH TERMINAL		
	0				8	4 1			Y	GROUND CONNECTION	P05	
	0				11	2 2			F	TO GRP31, ELM01 (DRIVE AMP. LEFT)		
	0				11	3 2			F	TO GRP32, ELM01 (DRIVE AMP. RIGHT)		
	0				12	2 2			F	TO SPOOLING MOTOR, LEFT (GRP87)		
	0				12	3 1			L	GROUND CONNECTION		
	0				12	3 2			L	GROUND CONNECTION		
	0				13	2 2			F	TO SPOOLING MOTOR, RIGHT (GRP88)		
					20	2 1				SSDA SYNCHRONIZER	P02	
					20	2 8				SSDA SYNCHRONIZER	P02	
					20	3 1				TAPE DECK CONTROLLER (GRP27)	P03	
					20	3 8				TAPE DECK CONTROLLER (GRP27)	P03	
					31	1 2			M	SUPPLY (FROM GRP08, ELM02)	J01	
					32	1 2			M	SUPPLY (FROM GRP08, ELM02)	J01	
					35	5 1			Y		P05	
					40	1 1				CONNECTOR XLR, INPUT	J01	
					40	2 1				CONNECTOR XLR, OUTPUT	P01	
					41	1 1				CONNECTOR XLR, INPUT	J01	
					41	2 1				CONNECTOR XLR, OUTPUT	P01	
					42	1 1				CONNECTOR XLR, INPUT	J01	
					42	2 1				CONNECTOR XLR, OUTPUT	P01	
	0				43	1 13			A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	0				43	3 1			L			
	0				43	11 13			B			
	0				84	5 1			L	CABLE TO GRP70, ELM09/11/12		
	4				87	1 2			M	GROUND CONNECTION (WIRE FIELD)		
	4				88	1 2			M	CONNECTOR SPOOLING MOTOR LEFT	J01	
										CONNECTOR SPOOLING MOTOR RIGHT	J01	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
HEADPH+1	6			60	5	3			N	TO PHONES CONNECTOR	J02	
	6			60	6	3			L	PHONES CONNECTOR		
	6			71	5	3			N	TO PHONES CONNECTOR	J02	
	6			71	6	3			L	PHONES CONNECTOR		
HEADPH+2	9			60	5	2			N	TO PHONES CONNECTOR	J02	
	9			60	6	2			L	PHONES CONNECTOR		
	9			71	5	2			N	TO PHONES CONNECTOR	J02	
	9			71	6	2			L	PHONES CONNECTOR		
INPAD-01	6			20	15	6			N	TO VU-METER PANEL, CH 1	J02	
				20	52	7				LINE AMPLIFIER, CH 1	J16	1.820.714.81
				20	53	1				MONO-STEREO-SWITCH	J17	1.820.720.00
	6			43	1	3			A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	6			43	11	3			B	CABLE TO GRP70, ELM09/11/12		
				70	8	6				VU-METER CH 01, AUDIO	J01	
				70	9	6				AUDIO CH 01 (FROM GRP43, ELM11)	J02	
INPAD-02	6			20	16	6			N	TO VU-METER PANEL, CH 2	J03	
				20	53	3				MONO-STEREO-SWITCH	J17	1.820.720.00
				20	57	7				LINE AMPLIFIER, CH 2	J21	1.820.714.81
	6			43	1	10			A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	6			43	11	10			B	CABLE TO GRP70, ELM09/11/12		
				70	10	6				VU-METER CH 02, AUDIO	J03	
				70	11	6				AUDIO CH 02 (FROM GRP43, ELM11)	J04	
INPDI-01	0			20	15	5			N	TO VU-METER PANEL, CH 1	J02	
	9			20	17	3			N	TO SOURCE SELECTOR (AUDIO)	J04	
				20	52	6				LINE AMPLIFIER, CH 1	J16	1.820.714.81
	0			43	1	16			A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	0			43	11	16			B	CABLE TO GRP70, ELM09/11/12		
	9			60	1	3			N	AUDIO INPUT (FROM GRP20, ELM17)	J01	
				70	8	5				VU-METER CH 01, AUDIO	J01	
				70	9	5				AUDIO CH 01 (FROM GRP43, ELM11)	J02	
				70	13	3				MONITOR AMPLIFIER, AUDIO	J06	
	9			71	1	3			N	AUDIO INPUT	J01	
INPDI-02	0			20	16	5			N	TO VU-METER PANEL, CH 2	J03	
	9			20	17	7			N	TO SOURCE SELECTOR (AUDIO)	J04	
				20	57	6				LINE AMPLIFIER, CH 2	J21	1.820.714.81
	0			43	1	23			A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	0			43	11	23			B	CABLE TO GRP70, ELM09/11/12		
	9			60	1	7			N	AUDIO INPUT (FROM GRP20, ELM17)	J01	
				70	10	5				VU-METER CH 02, AUDIO	J03	
				70	11	5				AUDIO CH 02 (FROM GRP43, ELM11)	J04	
				70	13	7				MONITOR AMPLIFIER, AUDIO	J06	
	9			71	1	7			N	AUDIO INPUT	J01	
IR-REFEX				34	2	13			B	CONNECTOR SYNCHRONIZER	J02	
				34	3	13			B	CONN. PARALLEL REMOTE CONTROL	J03	
				35	3	25				TO CONNECTOR SYNCHRONIZER	P03	
				35	4	25				TO CONN. PARALLEL REMOTE CONTR.	P04	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
K-BRAKE	1			20	65	2			F	CONNECTOR TO GRP25, ELM01	P15	
	1			20	74	2			X	TO GRP86, ELM01		1.811.898.00
				25	1	2			M	SUPPLY + SOLENOIDS	P07	
				86	1	2			M	BRAKE SOLENOID		
K-EDIT	9			20	65	21			F	CONNECTOR TO GRP25, ELM01	P15	
	9			20	75	2			X	TO GRP86, ELM02		1.811.898.00
				25	1	21			M	SUPPLY + SOLENOIDS	P07	
				86	2	2			M	EDIT SOLENOID		
K-LIFT	4			20	65	9			F	CONNECTOR TO GRP25, ELM01	P15	
	4			20	68	2			X	TO GRP80, ELM01		1.811.898.00
				25	1	9			M	SUPPLY + SOLENOIDS	P07	
				80	1	2				LIFT SOLENOID		
K-PRESSA	3			20	65	5			F	CONNECTOR TO GRP25, ELM01	P15	
	3			20	69	2			X	TO GRP81, ELM01		1.811.898.00
				25	1	5			M	SUPPLY + SOLENOIDS	P07	
				81	1	2				PRESS SOLENOID A		
K-PRESSB	2			20	65	1			F	CONNECTOR TO GRP25, ELM01	P15	
	2			20	70	2			X	TO GRP81, ELM02		1.811.898.00
				25	1	1			M	SUPPLY + SOLENOIDS	P07	
				81	2	2				PRESS SOLENOID B		
K-REC-01				20	49	2				HF-DRIVER, CH 1	J13	1.820.713.00
				20	50	4				RECORD AMPLIFIER, CH 1	J14	1.820.712.81
				20	51	4				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
K-REC-02				20	54	2				HF-DRIVER, CH 2	J18	1.820.713.00
				20	55	4				RECORD AMPLIFIER, CH 2	J19	1.820.712.81
				20	56	4				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
K-STDBY	8			20	65	22			F	CONNECTOR TO GRP25, ELM01	P15	
	8			20	71	2			X	TO GRP81, ELM03		1.811.898.00
				25	1	22			M	SUPPLY + SOLENOIDS	P07	
				81	3	2				STAND BY SOLENOID		
K-TTSL	6			20	65	17			F	CONNECTOR TO GRP25, ELM01	P15	
	6			20	72	2			X	TO GRP82, ELM05		1.811.898.00
				25	1	17			M	SUPPLY + SOLENOIDS	P07	
				82	5	2				HOLD SOLENOID, LEFT		
K-TTSR	5			20	65	13			F	CONNECTOR TO GRP25, ELM01	P15	
	5			20	73	2			X	TO GRP83, ELM05		1.811.898.00
				25	1	13			M	SUPPLY + SOLENOIDS	P07	
				83	5	2				HOLD SOLENOID, RIGHT		
KEY/CDIR				34	2	8			B	CONNECTOR SYNCHRONIZER	J02	
				35	3	15				TO CONNECTOR SYNCHRONIZER	P03	
LINE1	1			1	1	1			J	CONNECTOR POWER INPUT	P01	
	1			2	1	1			J	POWER SWITCH	S01	
LINE2	6			1	1	2			J	CONNECTOR POWER INPUT	P01	
	6			2	1	2			J	POWER SWITCH	S01	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
LINFA-TC	9		20	25	11				U	WIRE FIELD, TC HEADS + TC IN/OUT		
			20	47	15					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
	9		42	3	4				D	CONNECTOR LINE FILTER, INPUT	P01	
LINFA-01	0		20	29	5				U	WIRE FIELD, IN/OUT CH 1 + SUPPLY		
			20	52	14					LINE AMPLIFIER, CH 1	J16	1.820.714.81
	0		40	3	4				D	CONNECTOR LINE FILTER, INPUT	P01	
LINFA-02	0		20	34	5				U	WIRE FIELD, IN/OUT CH 2		
			20	57	14					LINE AMPLIFIER, CH 2	J21	1.820.714.81
	0		41	3	4				D	CONNECTOR LINE FILTER, INPUT	P01	
LINFB-TC	6		20	25	10				U	WIRE FIELD, TC HEADS + TC IN/OUT		
			20	47	16					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
	6		42	3	1				D	CONNECTOR LINE FILTER, INPUT	P01	
LINFB-01	6		20	29	4				U	WIRE FIELD, IN/OUT CH 1 + SUPPLY		
			20	52	15					LINE AMPLIFIER, CH 1	J16	1.820.714.81
	6		40	3	1				D	CONNECTOR LINE FILTER, INPUT	P01	
LINFB-02	6		20	34	4				U	WIRE FIELD, IN/OUT CH 2		
			20	57	15					LINE AMPLIFIER, CH 2	J21	1.820.714.81
	6		41	3	1				D	CONNECTOR LINE FILTER, INPUT	P01	
LINSA-TC			42	1	2					CONNECTOR XLR, INPUT	J01	
LINSA-01			40	1	2					CONNECTOR XLR, INPUT	J01	
LINSA-02			41	1	2					CONNECTOR XLR, INPUT	J01	
LINSB-TC			42	1	3					CONNECTOR XLR, INPUT	J01	
LINSB-01			40	1	3					CONNECTOR XLR, INPUT	J01	
LINSB-02			41	1	3					CONNECTOR XLR, INPUT	J01	
LOUFA-TC	9		20	25	14				U	WIRE FIELD, TC HEADS + TC IN/OUT		
			20	47	17					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
	9		42	4	4				D	CONNECTOR LINE FILTER, OUTPUT	P02	
LOUFA-01	0		20	15	2				N	TO VU-METER PANEL, CH 1	J02	
			20	29	2				U	WIRE FIELD, IN/OUT CH 1 + SUPPLY		
	0		20	52	3					LINE AMPLIFIER, CH 1	J16	1.820.714.81
	0		40	4	4				D	CONNECTOR LINE FILTER, OUTPUT	P02	
	0		43	1	4				A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	0		43	11	4				B	CABLE TO GRP70, ELM09/11/12		
			70	8	2					VU-METER CH 01, AUDIO	J01	
			70	9	2					AUDIO CH 01 (FROM GRP43, ELM11)	J02	
LOUFA-02	0		20	16	2				N	TO VU-METER PANEL, CH 2	J03	
			20	34	2				U	WIRE FIELD, IN/OUT CH 2		
	0		20	57	3					LINE AMPLIFIER, CH 2	J21	1.820.714.81
	0		41	4	4				D	CONNECTOR LINE FILTER, OUTPUT	P02	
	0		43	1	12				A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	0		43	11	12				B	CABLE TO GRP70, ELM09/11/12		

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF			70	10	2					VU-METER CH 02, AUDIO	J03	
LOUFA-02			70	11	2					AUDIO CH 02 (FROM GRP43, ELM11)	J04	
LOUFB-TC	6		20	25	13				U	WIRE FIELD, TC HEADS + TC IN/OUT		
			20	47	18					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
	6		42	4	1				D	CONNECTOR LINE FILTER, OUTPUT	P02	
LOUFB-01	6		20	15	3				N	TO VU-METER PANEL, CH 1	J02	
			20	29	1				U	WIRE FIELD, IN/OUT CH 1 + SUPPLY		
	6		20	52	4					LINE AMPLIFIER, CH 1	J16	1.820.714.81
	6		40	4	1				D	CONNECTOR LINE FILTER, OUTPUT	P02	
	6		43	1	17				A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	6		43	11	17				B	CABLE TO GRP70, ELM09/11/12		
			70	8	3					VU-METER CH 01, AUDIO	J01	
			70	9	3					AUDIO CH 01 (FROM GRP43, ELM11)	J02	
LOUFB-02	6		20	16	3				N	TO VU-METER PANEL, CH 2	J03	
			20	34	1				U	WIRE FIELD, IN/OUT CH 2		
	6		20	57	4					LINE AMPLIFIER, CH 2	J21	1.820.714.81
	6		41	4	1				D	CONNECTOR LINE FILTER, OUTPUT	P02	
	6		43	1	25				A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	6		43	11	25				B	CABLE TO GRP70, ELM09/11/12		
			70	10	3					VU-METER CH 02, AUDIO	J03	
			70	11	3					AUDIO CH 02 (FROM GRP43, ELM11)	J04	
LOUSA-TC			42	2	2					CONNECTOR XLR, OUTPUT	P01	
LOUSA-01			40	2	2					CONNECTOR XLR, OUTPUT	P01	
LOUSA-02			41	2	2					CONNECTOR XLR, OUTPUT	P01	
LOUSB-TC			42	2	3					CONNECTOR XLR, OUTPUT	P01	
LOUSB-01			40	2	3					CONNECTOR XLR, OUTPUT	P01	
LOUSB-02			41	2	3					CONNECTOR XLR, OUTPUT	P01	
MONIT-01	9		20	17	1				N	TO SOURCE SELECTOR (AUDIO)	J04	
			20	52	1					LINE AMPLIFIER, CH 1	J16	1.820.714.81
	9		43	1	6				A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	9		43	11	6				B	CABLE TO GRP70, ELM09/11/12		
	9		60	1	1				N	AUDIO INPUT (FROM GRP20, ELM17)	J01	
			70	12	1					AUDIO + TC (FROM GRP43, ELM11)	J05	
			70	13	1					MONITOR AMPLIFIER, AUDIO	J06	
	9		71	1	1				N	AUDIO INPUT	J01	
MONIT-02	9		20	17	5				N	TO SOURCE SELECTOR (AUDIO)	J04	
			20	57	1					LINE AMPLIFIER, CH 2	J21	1.820.714.81
	9		43	1	20				A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	9		43	11	20				B	CABLE TO GRP70, ELM09/11/12		
	9		60	1	5				N	AUDIO INPUT (FROM GRP20, ELM17)	J01	
			70	12	5					AUDIO + TC (FROM GRP43, ELM11)	J05	
			70	13	5					MONITOR AMPLIFIER, AUDIO	J06	
	9		71	1	5				N	AUDIO INPUT	J01	

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
UR-CMCLK					34 2 11 35 3 21				B	CONNECTOR SYNCHRONIZER TO CONNECTOR SYNCHRONIZER	J02 P03	
OR-MVCLK					34 2 7 35 3 13				B	CONNECTOR SYNCHRONIZER TO CONNECTOR SYNCHRONIZER	J02 P03	
OR-MVDIR					34 2 10 35 3 19				B	CONNECTOR SYNCHRONIZER TO CONNECTOR SYNCHRONIZER	J02 P03	
UR-SYEN8					34 2 12 35 3 23				B	CONNECTOR SYNCHRONIZER TO CONNECTOR SYNCHRONIZER	J02 P03	
PENB-L					24 1 6 31 2 6					TO GRP31, ELM02 FROM GRP24, ELM01	P02 P01	
PENB-R					24 2 6 32 2 6					TO GRP32, ELM02 FROM GRP24, ELM02	P03 P01	
PRIMW-1	1 1				4 1 5 6 1 1				L Y	VOLTAGE SELECTOR PRIMARY 1		1.811.521.00
PRIMW-3	3 3				4 1 2 6 1 3				L Y	VOLTAGE SELECTOR PRIMARY 1		1.811.521.00
PRIMW-4	4-4 4				4 1 4A 6 1 4				L Y	VOLTAGE SELECTOR PRIMARY 1		1.811.521.00
PRIMW-5	5 5				4 1 6 6 2 5				L Y	VOLTAGE SELECTOR PRIMARY 2		1.811.522.00
PRIMW-6	6-4 6				4 1 4B 6 2 6				L Y	VOLTAGE SELECTOR PRIMARY 2		1.811.522.00
PRIMW-7	7 7				4 1 3 6 2 7				L Y	VOLTAGE SELECTOR PRIMARY 2		1.811.522.00
RCV-232					20 45 9					SMPT/EBU INTERFACE	J09	1.820.751.00
RECEIVA					20 6 6 20 45 6 46 1 8 46 2 8				B B	SMPT/EBU BUS SMPT/EBU INTERFACE CONNECTOR SMPT/EBU BUS CONNECTOR SMPT/EBU BUS	P06 J09 J04 J05	1.820.751.00
RECEIVB					20 6 5 20 45 5 46 1 3 46 2 3				B B	SMPT/EBU BUS SMPT/EBU INTERFACE CONNECTOR SMPT/EBU BUS CONNECTOR SMPT/EBU BUS	P06 J09 J04 J05	1.820.751.00
RECEIVCM					20 6 7 20 45 7 46 1 4 46 2 4				B B	SMPT/EBU BUS SMPT/EBU INTERFACE CONNECTOR SMPT/EBU BUS CONNECTOR SMPT/EBU BUS	P06 J09 J04 J05	1.820.751.00

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 85 *
 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
RECHH-TC	9				20 25 5 20 47 7 9 20 80 26 5 90 1 26				U B A	WIRE FIELD, TC HEADS + TC IN/OUT TIME CODE WRITE/READ UNIT CONN. HEAD BLOCK ASSEMBLY HEAD BLOCK CONNECTOR	J11 P01	1.820.721.81
RECHH-01	9				20 27 2 20 50 10 9 20 80 47 1 90 1 47				U B A	WIRE FIELD, RECORD HEAD CH 1 RECORD AMPLIFIER, CH 1 CONN. HEAD BLOCK ASSEMBLY HEAD BLOCK CONNECTOR	J14 P01	1.820.712.81
RECHH-02	9				20 32 2 20 55 10 9 20 80 30 1 90 1 30				U B A	WIRE FIELD, RECORD HEAD CH 2 RECORD AMPLIFIER, CH 2 CONN. HEAD BLOCK ASSEMBLY HEAD BLOCK CONNECTOR	J19 P01	1.820.712.81
RECHL-TC	6				20 25 4 20 47 8 6 20 80 42 3 90 1 42				U B A	WIRE FIELD, TC HEADS + TC IN/OUT TIME CODE WRITE/READ UNIT CONN. HEAD BLOCK ASSEMBLY HEAD BLOCK CONNECTOR	J11 P01	1.820.721.81
RECHL-01	6				20 27 1 20 50 9 6 20 80 46 0 90 1 46				U B A	WIRE FIELD, RECORD HEAD CH 1 RECORD AMPLIFIER, CH 1 CONN. HEAD BLOCK ASSEMBLY HEAD BLOCK CONNECTOR	J14 P01	1.820.712.81
RECHL-02	6				20 32 1 20 55 9 6 20 80 29 0 90 1 29				U B A	WIRE FIELD, RECORD HEAD CH 2 RECORD AMPLIFIER, CH 2 CONN. HEAD BLOCK ASSEMBLY HEAD BLOCK CONNECTOR	J19 P01	1.820.712.81
RECIN-01					20 50 1 20 52 8 20 53 15					RECORD AMPLIFIER, CH 1 LINE AMPLIFIER, CH 1 MONO-STEREO-SWITCH	J14 J16 J17	1.820.712.81 1.820.714.81 1.820.720.00
RECIN-02					20 53 13 20 55 1 20 57 8					MONO-STEREO-SWITCH RECORD AMPLIFIER, CH 2 LINE AMPLIFIER, CH 2	J17 J19 J21	1.820.720.00 1.820.712.81 1.820.714.81
REPHH-TC	9				20 25 8 20 47 10 9 20 80 27 5 90 1 27				U B A	WIRE FIELD, TC HEADS + TC IN/OUT TIME CODE WRITE/READ UNIT CONN. HEAD BLOCK ASSEMBLY HEAD BLOCK CONNECTOR	J11 P01	1.820.721.81
REPHH-01	1				90 2 12				L	REPRODUCE PREAMPLIFIER		
REPHH-02	1				90 2 14				L	REPRODUCE PREAMPLIFIER		
REPHL-TC	6				20 25 7 20 47 11 6 20 80 43 3 90 1 43				U B A	WIRE FIELD, TC HEADS + TC IN/OUT TIME CODE WRITE/READ UNIT CONN. HEAD BLOCK ASSEMBLY HEAD BLOCK CONNECTOR	J11 P01	1.820.721.81
REPHL-01	0				90 2 11				L	REPRODUCE PREAMPLIFIER		
REPHL-02	0				90 2 13				L	REPRODUCE PREAMPLIFIER		

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
REPRE-01	9			20	28	2			U	WIRE FIELD, REPRODUCE PREAMP. CH 1		
				20	51	6				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
	0			20	80	50			B	CONN. HEAD BLOCK ASSEMBLY		
	0			90	1	50			A	HEAD BLOCK CONNECTOR	P01	
	0			90	2	2			L	REPRODUCE PREAMPLIFIER		
REPRE-02	9			20	33	2			U	WIRE FIELD, REPRODUCE PREAMP. CH 2		
				20	56	6				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
	9			20	80	33			B	CONN. HEAD BLOCK ASSEMBLY		
	0			90	1	33			A	HEAD BLOCK CONNECTOR	P01	
	0			90	2	7			L	REPRODUCE PREAMPLIFIER		
REPRO-01	6			20	28	1			U	WIRE FIELD, REPRODUCE PREAMP. CH 1		
				20	51	7				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
	6			20	80	49			B	CONN. HEAD BLOCK ASSEMBLY		
	6			90	1	49			A	HEAD BLOCK CONNECTOR	P01	
	6			90	2	3			L	REPRODUCE PREAMPLIFIER		
REPRO-02	6			20	33	1			U	WIRE FIELD, REPRODUCE PREAMP. CH 2		
				20	56	7				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
	6			20	80	32			B	CONN. HEAD BLOCK ASSEMBLY		
	6			90	1	32			A	HEAD BLOCK CONNECTOR	P01	
	6			90	2	6			L	REPRODUCE PREAMPLIFIER		
S-LINE1	1			1	2	2			J	FUSE (LINE)	F01	
	1			2	1	3			J	POWER SWITCH	S01	
S-LINE2	6			2	1	4			J	POWER SWITCH	S01	
	6			3	1	2			J	LINE FILTER		
S-MONMUT	2			60	5	5			N	TO PHONES CONNECTOR	J02	
	2			60	6	1A			L	PHONES CONNECTOR		
	2			71	5	5			N	TO PHONES CONNECTOR	J02	
	2			71	6	1A			L	PHONES CONNECTOR		
SF-LINE1	1			3	1	3			J	LINE FILTER		
	1-2			4	1	7			L	VOLTAGE SELECTOR		
	2			6	1	2			Y	PRIMARY 1		1.811.521.00
SF-LINE2	6			3	1	4			J	LINE FILTER		
	6-8			4	1	1			L	VOLTAGE SELECTOR		
	8			6	2	8			Y	PRIMARY 2		1.811.522.00
SHIELD				33	2	1				TO GRP34, ELM01	P02	
				34	1	1			B	CONN. AUTOLOCATOR, REMOTE TIMER	J01	
SIGN.GND				33	2	6				TO GRP34, ELM01	P02	
				34	1	8			B	CONN. AUTOLOCATOR, REMOTE TIMER	J01	
SINI-L				24	1	7				TO GRP31, ELM02	P02	
				31	2	7				FROM GRP24, ELM01	P01	
SINI-R				24	2	7				TO GRP32, ELM02	P03	
				32	2	7				FROM GRP24, ELM02	P01	

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
SIN2-L				24	1	9				TO GRP31, ELM02	P02	
				31	2	9				FROM GRP24, ELM01	P01	
SIN2-R				24	2	9				TO GRP32, ELM02	P03	
				32	2	9				FROM GRP24, ELM02	P01	
SND-232				20	45	14				SMPTE/EBU INTERFACE	J09	1.820.751.00
SPARE				20	6	9				SMPTE/EBU BUS	P06	
				46	1	5			B	CONNECTOR SMPTE/EBU BUS	J04	
				46	2	5			B	CONNECTOR SMPTE/EBU BUS	J05	
SR-AREN8				36	3	13				CONNECTION REMOTE PANEL	P03	
				36	4	7				CHANNEL REMOTE CONNECTOR	J04	
SR-FAORY				34	3	6			B	CONN. PARALLEL REMOTE CONTROL	J03	
				35	4	11				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-FORW				34	2	21			B	CONNECTOR SYNCHRONIZER	J02	
				34	3	21			B	CONN. PARALLEL REMOTE CONTROL	J03	
				35	3	16				TO CONNECTOR SYNCHRONIZER	P03	
				35	4	16				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-INPTC				36	3	11				CONNECTION REMOTE PANEL	P03	
				36	4	6				CHANNEL REMOTE CONNECTOR	J04	
SR-INP01				36	3	5				CONNECTION REMOTE PANEL	P03	
				36	4	3				CHANNEL REMOTE CONNECTOR	J04	
SR-INP02				36	3	6				CONNECTION REMOTE PANEL	P03	
				36	4	22				CHANNEL REMOTE CONNECTOR	J04	
SR-LIFT				34	2	17			B	CONNECTOR SYNCHRONIZER	J02	
				34	3	17			B	CONN. PARALLEL REMOTE CONTROL	J03	
				35	3	8				TO CONNECTOR SYNCHRONIZER	P03	
				35	4	8				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-LOCST				34	3	18			B	CONN. PARALLEL REMOTE CONTROL	J03	
				35	4	10				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-MUTE				34	2	18			B	CONNECTOR SYNCHRONIZER	J02	
				35	3	10				TO CONNECTOR SYNCHRONIZER	P03	
SR-PLAY				34	2	22			B	CONNECTOR SYNCHRONIZER	J02	
				34	3	22			B	CONN. PARALLEL REMOTE CONTROL	J03	
				35	3	18				TO CONNECTOR SYNCHRONIZER	P03	
				35	4	18				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-REATC				36	3	8				CONNECTION REMOTE PANEL	P03	
				36	4	23				CHANNEL REMOTE CONNECTOR	J04	
SR-REA01				36	3	2				CONNECTION REMOTE PANEL	P03	
				36	4	4				CHANNEL REMOTE CONNECTOR	J04	
				36	4	20				CHANNEL REMOTE CONNECTOR	J04	
SR-REA02				36	3	7				CONNECTION REMOTE PANEL	P03	

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 88 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
SR-REC					34	2 19			B	CONNECTOR SYNCHRONIZER	J02	
					34	3 19			B	CONN. PARALLEL REMOTE CONTROL	J03	
					35	3 12				TO CONNECTOR SYNCHRONIZER	P03	
					35	4 12				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-REHSL					34	2 6			B	CONNECTOR SYNCHRONIZER	J02	
					35	3 11				TO CONNECTOR SYNCHRONIZER	P03	
SR-REPTC					36	3 10				CONNECTION REMOTE PANEL	P03	
					36	4 24				CHANNEL REMOTE CONNECTOR	J04	
SR-REP01					36	3 4				CONNECTION REMOTE PANEL	P03	
					36	4 21				CHANNEL REMOTE CONNECTOR	J04	
SR-REP02					36	3 9				CONNECTION REMOTE PANEL	P03	
					36	4 5				CHANNEL REMOTE CONNECTOR	J04	
SR-RESET					34	3 10			B	CONN. PARALLEL REMOTE CONTROL	J03	
					35	4 19				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-REW					34	2 20			B	CONNECTOR SYNCHRONIZER	J02	
					34	3 20			B	CONN. PARALLEL REMOTE CONTROL	J03	
					35	3 14				TO CONNECTOR SYNCHRONIZER	P03	
					35	4 14				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-STOP					34	2 23			B	CONNECTOR SYNCHRONIZER	J02	
					34	3 23			B	CONN. PARALLEL REMOTE CONTROL	J03	
					35	3 20				TO CONNECTOR SYNCHRONIZER	P03	
					35	4 20				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-VRSPD					34	2 5			B	CONNECTOR SYNCHRONIZER	J02	
					34	3 5			B	CONN. PARALLEL REMOTE CONTROL	J03	
					35	3 9				TO CONNECTOR SYNCHRONIZER	P03	
					35	4 9				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-OLOC					34	3 14			B	CONN. PARALLEL REMOTE CONTROL	J03	
					35	4 2				TO CONN. PARALLEL REMOTE CONTR.	P04	
SYNHH-01					20	50 13				RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20	51 13				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
SYNHH-02					20	55 13				RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56 13				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
SYNHL-01					20	50 12				RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20	51 12				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
SYNHL-02					20	55 12				RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56 12				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
SYPRE-01					20	51 3				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
SYPRE-02					20	56 3				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
SYS-CTS					20	2 3				SSDA SYNCHRONIZER	P02	
					20	43 13B				MASTER SERIAL INTERFACE	J07	1.820.753.00

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
SYS-DTR					20	2 5				SSDA SYNCHRONIZER	P02	
					20	43 13A				MASTER SERIAL INTERFACE	J07	1.820.753.00
SYS-RX					20	2 4				SSDA SYNCHRONIZER	P02	
					20	43 12A				MASTER SERIAL INTERFACE	J07	1.820.753.00
SYS-TX					20	2 6				SSDA SYNCHRONIZER	P02	
					20	43 12B				MASTER SERIAL INTERFACE	J07	1.820.753.00
T-A0					33	1 12				FROM GRP35, ELM01	P01	
					35	1 12				TO GRP33, ELM01	P01	
T-A1					33	1 9				FROM GRP35, ELM01	P01	
					35	1 9				TO GRP33, ELM01	P01	
T-A2					33	1 10				FROM GRP35, ELM01	P01	
					35	1 10				TO GRP33, ELM01	P01	
T-A3					33	1 7				FROM GRP35, ELM01	P01	
					35	1 7				TO GRP33, ELM01	P01	
T-B0					33	1 8				FROM GRP35, ELM01	P01	
					35	1 8				TO GRP33, ELM01	P01	
T-B0					33	1 15				FROM GRP35, ELM01	P01	
					35	1 15				TO GRP33, ELM01	P01	
T-B1					33	1 13				FROM GRP35, ELM01	P01	
					35	1 13				TO GRP33, ELM01	P01	
T-B2					33	1 14				FROM GRP35, ELM01	P01	
					35	1 14				TO GRP33, ELM01	P01	
T-B3					33	1 11				FROM GRP35, ELM01	P01	
					35	1 11				TO GRP33, ELM01	P01	
T-CLK1					25	5 13				TAPE TENSION SENSOR, LEFT	P04	
					25	6 13				TAPE TENSION SENSOR, RIGHT	P03	
					81	4 7				PRESS ASSEMBLY SENSOR	P01	
					82	1 13				TO TD PERIPHERY DRIVER	P01	
					82	3 7				TO TAPE MOVE SENSOR, LEFT	P02	
					83	1 13				TO TD PERIPHERY DRIVER	P01	
					83	3 7				TO TAPE MOVE SENSOR, RIGHT	P02	
T-CLK2					25	5 14				TAPE TENSION SENSOR, LEFT	P04	
					25	6 14				TAPE TENSION SENSOR, RIGHT	P03	
					81	4 8				PRESS ASSEMBLY SENSOR	P01	
					82	1 14				TO TD PERIPHERY DRIVER	P01	
					82	3 8				TO TAPE MOVE SENSOR, LEFT	P02	
					83	1 14				TO TD PERIPHERY DRIVER	P01	
					83	3 8				TO TAPE MOVE SENSOR, RIGHT	P02	
T-DT-CH1					20	7 12				VU-METER PANEL, EXTERNAL	P07	
					20	8 12				VU-METER PANEL, EXTERNAL	P08	
					20	9 12				MONITOR UNIT, INTERN	P09	

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* WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 92 *

* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *****

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF T-PWRON	5		20	66	6				F	CONNECTOR TO GRP27, ELM04	P16	
			27	4	6				M	SUPPLY (FROM GRP20, ELM20)	J01	
			30	2	7				M	OUTPUT (TO GRP20, ELM10)	P01	
T-READS			36	1	10					OUTPUT TO VU-PANEL	P01	
T-READSL			20	7	10					VU-METER PANEL, EXTERNAL	P07	
			20	8	10					VU-METER PANEL, EXTERNAL	P08	
			20	9	10					MONITOR UNIT, INTERN	P09	
			20	46	28					MASTER PERIPHERY CONTR.	J10	1.820.728.00
			36	2	10					INPUT FROM BASIS BOARD	P02	
			43	2	18					CONTROL CONN., FROM GRP20, ELM07		
			43	12	18					CABLE TO GRP70, ELM01		
			58	1	10					FROM B. BOARD TAPE DECK, ELM 19	P01	
			58	2	10					TO VU-METER PANEL	P02	
			60	2	10					FROM GRP20, ELM09	P01	
			70	1	10					FROM GRP43, ELM12	P01	
			70	2	10					RESERVE	P02	
			70	3	10					RESERVE	P03	
			70	4	10					COMMANDS CH 03	P04	
			70	5	10					COMMANDS CH 01	P05	
			70	6	10					COMMANDS CH 02	P06	
			70	7	10					COMMANDS MONITOR AMPLIFIER	P07	
			71	2	10					FROM GRP70, ELM07	P01	
T-REFEXT			20	5	15					PARALLEL REMOTE IF (GRP35)	P05	
			20	7	23					VU-METER PANEL, EXTERNAL	P07	
			20	8	23					VU-METER PANEL, EXTERNAL	P08	
			20	41	12					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
			35	2	15					FROM GRP20, ELM05	P02	
			36	1	23					OUTPUT TO VU-PANEL	P01	
			36	2	23					INPUT FROM BASIS BOARD	P02	
			43	2	12					CONTROL CONN., FROM GRP20, ELM07		
			43	12	12					CABLE TO GRP70, ELM01		
			70	1	23					FROM GRP43, ELM12	P01	
			70	2	23					RESERVE	P02	
			70	3	13					RESERVE	P03	
T-REFINT			20	38	12					PAR. CONT. INT. SYNCHRONIZER	P12	
			20	41	3					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
T-RESET			33	1	24					FROM GRP35, ELM01	P01	
			35	1	24					TO GRP33, ELM01	P01	
T-RL0			33	1	4					FROM GRP35, ELM01	P01	
			35	1	4					TO GRP33, ELM01	P01	
T-RL1			33	1	5					FROM GRP35, ELM01	P01	
			35	1	5					TO GRP33, ELM01	P01	
T-RL2			33	1	26					FROM GRP35, ELM01	P01	
			35	1	26					TO GRP33, ELM01	P01	
T-RL3			33	1	25					FROM GRP35, ELM01	P01	
			35	1	25					TO GRP33, ELM01	P01	

* WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 93 *

* 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *****

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
T-RL4			33	1	23					FROM GRP35, ELM01	P01	
			35	1	23					TO GRP33, ELM01	P01	
T-RL5			33	1	22					FROM GRP35, ELM01	P01	
			35	1	22					TO GRP33, ELM01	P01	
T-RL6			33	1	19					FROM GRP35, ELM01	P01	
			35	1	19					TO GRP33, ELM01	P01	
T-RL7			33	1	18					FROM GRP35, ELM01	P01	
			35	1	18					TO GRP33, ELM01	P01	
T-SADA			20	7	7					VU-METER PANEL, EXTERNAL	P07	
			20	8	7					VU-METER PANEL, EXTERNAL	P08	
			20	9	7					MONITOR UNIT, INTERN	P09	
			20	46	1A					MASTER PERIPHERY CONTR.	J10	1.820.728.00
			36	1	7					OUTPUT TO VU-PANEL	P01	
			36	2	7					INPUT FROM BASIS BOARD	P02	
			43	2	4					CONTROL CONN., FROM GRP20, ELM07		
			43	12	4					CABLE TO GRP70, ELM01		
			58	1	7					FROM B. BOARD TAPE DECK, ELM 19	P01	
			58	2	7					TO VU-METER PANEL	P02	
			60	2	7					FROM GRP20, ELM09	P01	
			70	1	7					FROM GRP43, ELM12	P01	
			70	2	7					RESERVE	P02	
			70	3	7					RESERVE	P03	
			70	4	7					COMMANDS CH 03	P04	
			70	5	7					COMMANDS CH 01	P05	
			70	6	7					COMMANDS CH 02	P06	
			70	7	7					COMMANDS MONITOR AMPLIFIER	P07	
			71	2	7					FROM GRP70, ELM07	P01	
T-SADB			20	7	8					VU-METER PANEL, EXTERNAL	P07	
			20	8	8					VU-METER PANEL, EXTERNAL	P08	
			20	9	8					MONITOR UNIT, INTERN	P09	
			20	46	18					MASTER PERIPHERY CONTR.	J10	1.820.728.00
			36	1	8					OUTPUT TO VU-PANEL	P01	
			36	2	8					INPUT FROM BASIS BOARD	P02	
			43	2	17					CONTROL CONN., FROM GRP20, ELM07		
			43	12	17					CABLE TO GRP70, ELM01		
			58	1	8					FROM B. BOARD TAPE DECK, ELM 19	P01	
			58	2	8					TO VU-METER PANEL	P02	
			60	2	8					FROM GRP20, ELM09	P01	
			70	1	8					FROM GRP43, ELM12	P01	
			70	2	8					RESERVE	P02	
			70	3	8					RESERVE	P03	
			70	4	8					COMMANDS CH 03	P04	
			70	5	8					COMMANDS CH 01	P05	
			70	6	8					COMMANDS CH 02	P06	
			70	7	8					COMMANDS MONITOR AMPLIFIER	P07	
			71	2	8					FROM GRP70, ELM07	P01	
T-SADC			20	7	9					VU-METER PANEL, EXTERNAL	P07	
			20	8	9					VU-METER PANEL, EXTERNAL	P08	
			20	9	9					MONITOR UNIT, INTERN	P09	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 94 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF			20	46	2A					MASTER PERIPHERY CONTR.	J10	1.820.728.00
T-SADC			36	1	9					OUTPUT TO VU-PANEL	P01	
			36	2	9					INPUT FROM BASIS BOARD	P02	
			43	2	5					CONTROL CONN., FROM GRP20, ELM07		
			43	12	5					CABLE TO GRP70, ELM01		
			58	1	9					FROM B. BOARD TAPE DECK, ELM 19	P01	
			58	2	9					TO VU-METER PANEL	P02	
			60	2	9					FROM GRP20, ELM09	P01	
			70	1	9					FROM GRP43, ELM12	P01	
			70	2	9					RESERVE	P02	
			70	3	9					RESERVE	P03	
			70	4	9					COMMANDS CH 03	P04	
			70	5	9					COMMANDS CH 01	P05	
			70	6	9					COMMANDS CH 02	P06	
			70	7	9					COMMANDS MONITOR AMPLIFIER	P07	
			71	2	9					FROM GRP70, ELM07	P01	
T-SL0			33	1	16					FROM GRP35, ELM01	P01	
			35	1	16					TO GRP33, ELM01	P01	
T-SL1			33	1	17					FROM GRP35, ELM01	P01	
			35	1	17					TO GRP33, ELM01	P01	
T-SL2			33	1	21					FROM GRP35, ELM01	P01	
			35	1	21					TO GRP33, ELM01	P01	
T-SL3			33	1	6					FROM GRP35, ELM01	P01	
			35	1	6					TO GRP33, ELM01	P01	
T-SUPVON			20	12	6					FUSE FAILURE DETECTOR (GRP59)	P11	
	9		20	20	11				U	WIRE FIELD, TO CONN. GRP20, ELM65/66		1.811.898.00
			20	44	2					MP-UNIT MASTER	J08	
	9		20	66	9				F	CONNECTOR TO GRP27, ELM04	P16	1.811.786.00
			27	4	9				M	SUPPLY (FROM GRP20, ELM20)	J01	
			59	1	6					FROM GRP20, ELM12	P01	
T-TC/RC			20	17	11					TO SOURCE SELECTOR (AUDIO)	J04	
	9		43	1	7				A	AUDIO CONN., FROM GRP20, ELM15/16/17		
	9		43	11	7				B	CABLE TO GRP70, ELM09/11/12		
	9		60	1	11				N	AUDIO INPUT (FROM GRP20, ELM17)	J01	
			70	12	11					AUDIO + TC (FROM GRP43, ELM11)	J05	
			70	13	11					MONITOR AMPLIFIER, AUDIO	J06	
	9		71	1	11				N	AUDIO INPUT	J01	
T-TC/RCL			20	90	2					RC-FILTER		
T-TCINDL			20	11	10				F	SYNCHRONIZER (SUPPLY)	P10	
			20	47	1					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
			20	48	1					TIME CODE DELAY UNIT	J12	1.820.722.81
			20	90	1					RC-FILTER		
T-TCOUDL			20	11	11				F	SYNCHRONIZER (SUPPLY)	P10	
			20	47	2					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
			20	48	2					TIME CODE DELAY UNIT	J12	1.820.722.81

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 95 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
T-TCPRES			20	47	14					TIME CODE WRITE/READ UNIT	J11	1.820.721.81
			20	48	14					TIME CODE DELAY UNIT	J12	1.820.722.81
T-TENDL			25	5	12					TAPE TENSION SENSOR, LEFT	P04	
			82	1	12					TO TD PERIPHERY DRIVER	P01	
T-TENDR			25	6	12					TAPE TENSION SENSOR, RIGHT	P03	
			83	1	12					TO TD PERIPHERY DRIVER	P01	
T-TNDL	4		82	2	3				N	TAPE END SWITCH, LEFT		
T-TNDR	4		83	2	3				N	TAPE END SWITCH, RIGHT		
T-VARSPD			20	7	21					VU-METER PANEL, EXTERNAL	P07	
			20	8	21					VU-METER PANEL, EXTERNAL	P08	
			36	1	21					OUTPUT TO VU-PANEL	P01	
			36	2	21					INPUT FROM BASIS BOARD	P02	
			43	2	11					CONTROL CONN., FROM GRP20, ELM07		
			43	12	11					CABLE TO GRP70, ELM01		
			70	1	21					FROM GRP43, ELM12	P01	
			70	2	21					RESERVE	P02	
			70	3	15					RESERVE	P03	
T-WCLK1L			25	5	7					TAPE TENSION SENSOR, LEFT	P04	
			82	1	7					TO TD PERIPHERY DRIVER	P01	
			82	4	7					TO SPOOLING MOTOR TACHO SENSOR L.P03		
			87	2	7					CONN. TACHO SENSOR (S 2000 ONLY) P03		
T-WCLK1R			25	6	7					TAPE TENSION SENSOR, RIGHT	P03	
			83	1	7					TO TD PERIPHERY DRIVER	P01	
			83	4	7					TO SPOOLING MOTOR TACHO SENSOR R.P03		
			88	2	7					CONN. TACHO SENSOR (S 2000 ONLY) P03		
T-WCLK2L			25	5	8					TAPE TENSION SENSOR, LEFT	P04	
			82	1	8					TO TD PERIPHERY DRIVER	P01	
			82	4	8					TO SPOOLING MOTOR TACHO SENSOR L.P03		
			87	2	8					CONN. TACHO SENSOR (S 2000 ONLY) P03		
T-WCLK2R			25	6	8					TAPE TENSION SENSOR, RIGHT	P03	
			83	1	8					TO TD PERIPHERY DRIVER	P01	
			83	4	8					TO SPOOLING MOTOR TACHO SENSOR R.P03		
			88	2	8					CONN. TACHO SENSOR (S 2000 ONLY) P03		
T-WRTSL			20	7	11					VU-METER PANEL, EXTERNAL	P07	
			20	8	11					VU-METER PANEL, EXTERNAL	P08	
			20	9	11					MONITOR UNIT, INTERN	P09	
			20	46	3A					MASTER PERIPHERY CONTR.	J10	1.820.728.00
			36	1	11					OUTPUT TO VU-PANEL	P01	
			36	2	11					INPUT FROM BASIS BOARD	P02	
			43	2	6					CONTROL CONN., FROM GRP20, ELM07		
			43	12	6					CABLE TO GRP70, ELM01		
			58	1	11					FROM B. BOARD TAPE DECK, ELM 19	P01	
			58	2	11					TO VU-METER PANEL	P02	
			60	2	11					FROM GRP20, ELM09	P01	
			70	1	11					FROM GRP43, ELM12	P01	

STUDER A812

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 96 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<--- CONT.OF T-WRTSL					70	2 11				RESERVE	P02	
					70	3 11				RESERVE	P03	
					70	4 11				COMMANDS CH 03	P04	
					70	5 11				COMMANDS CH 01	P05	
					70	6 11				COMMANDS CH 02	P06	
					70	7 11				COMMANDS MONITOR AMPLIFIER	P07	
					71	2 11				FROM GRP70, ELM07	P01	
TA-ACTM0					20	46 6B				MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	53 20				MONO-STEREO-SWITCH	J17	1.820.720.00
TA-ACTTC					20	46 8B				MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	47 20				TIME CODE WRITE/READ UNIT	J11	1.820.721.81
					20	48 20				TIME CODE DELAY UNIT	J12	1.820.722.81
TA-ACT01					20	46 7B				MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	49 20				HF-DRIVER, CH 1	J13	1.820.713.00
					20	50 20				RECORD AMPLIFIER, CH 1	J14	1.820.712.81
					20	51 20				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52 20				LINE AMPLIFIER, CH 1	J16	1.820.714.81
TA-ACT02					20	46 9B				MASTER PERIPHERY CONTR.	J10	1.820.728.00
					20	54 20				HF-DRIVER, CH 2	J18	1.820.713.00
					20	55 20				RECORD AMPLIFIER, CH 2	J19	1.820.712.81
					20	56 20				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57 20				LINE AMPLIFIER, CH 2	J21	1.820.714.81
TA-AUIR					20	41 15				CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20	42 12				CAPSTAN CONTROL UNIT	J06	1.820.764.00
					20	43 21B				MASTER SERIAL INTERFACE	J07	1.820.753.00
					20	46 11A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
TAPAD-01	6				20	15 8		N		TO VU-METER PANEL, CH 1	J02	
	6				20	52 10		A		LINE AMPLIFIER, CH 1	J16	1.820.714.81
	6				43	1 14		B		AUDIO CONN., FROM GRP20, ELM15/16/17		
					43	11 14				CABLE TO GRP70, ELM09/11/12		
					70	8 8				VU-METER CH 01, AUDIO	J01	
					70	9 8				AUDIO CH 01 (FROM GRP43, ELM11)	J02	
TAPAD-02	6				20	16 8		N		TO VU-METER PANEL, CH 2	J03	
	6				20	57 10		A		LINE AMPLIFIER, CH 2	J21	1.820.714.81
	6				43	1 22		B		AUDIO CONN., FROM GRP20, ELM15/16/17		
					43	11 22				CABLE TO GRP70, ELM09/11/12		
					70	10 8				VU-METER CH 02, AUDIO	J03	
					70	11 8				AUDIO CH 02 (FROM GRP43, ELM11)	J04	
TAPDI-01					20	51 10				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
					20	52 12				LINE AMPLIFIER, CH 1	J16	1.820.714.81
					20	53 9				MONO-STEREO-SWITCH	J17	1.820.720.00
TAPDI-02					20	53 11				MONO-STEREO-SWITCH	J17	1.820.720.00
					20	56 10				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
					20	57 12				LINE AMPLIFIER, CH 2	J21	1.820.714.81
TAPLI-01					20	51 1				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TAPLI-02					20	56 1				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
TAPMS-01	0				20	15 9		N		TO VU-METER PANEL, CH 1	J02	
					20	52 11		A		LINE AMPLIFIER, CH 1	J16	1.820.714.81
	0				20	53 7		B		MONO-STEREO-SWITCH	J17	1.820.720.00
	0				43	1 1				AUDIO CONN., FROM GRP20, ELM15/16/17		
					43	11 1				CABLE TO GRP70, ELM09/11/12		
					70	8 9				VU-METER CH 01, AUDIO	J01	
					70	9 9				AUDIO CH 01 (FROM GRP43, ELM11)	J02	
TAPMS-02	0				20	16 9		N		TO VU-METER PANEL, CH 2	J03	
					20	53 5		A		MONO-STEREO-SWITCH	J17	1.820.720.00
	0				20	57 11		B		LINE AMPLIFIER, CH 2	J21	1.820.714.81
	0				43	1 9				AUDIO CONN., FROM GRP20, ELM15/16/17		
					43	11 9				CABLE TO GRP70, ELM09/11/12		
					70	10 9				VU-METER CH 02, AUDIO	J03	
					70	11 9				AUDIO CH 02 (FROM GRP43, ELM11)	J04	
TC-ADRO					20	39 23				TO TAPE DECK GRP27, ELM02	P13	
					20	40 23				OPTION INT. SYNCHRONIZER	P14	
					20	41 31				CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20	42 31				CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27	2 23				FROM GRP20, ELM39	P02	
TC-ADR1					20	39 21				TO TAPE DECK GRP27, ELM02	P13	
					20	40 21				OPTION INT. SYNCHRONIZER	P14	
					20	41 30				CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20	42 30				CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27	2 21				FROM GRP20, ELM39	P02	
TC-ADR2					20	39 19				TO TAPE DECK GRP27, ELM02	P13	
					20	40 19				OPTION INT. SYNCHRONIZER	P14	
					20	41 29				CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20	42 29				CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27	2 19				FROM GRP20, ELM39	P02	
TC-CAPDC					20	1 14				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
					20	42 4				CAPSTAN CONTROL UNIT	J06	1.820.764.00
					85	1 14					P01	
TC-CDIR1					20	41 5				CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20	42 6				CAPSTAN CONTROL UNIT	J06	1.820.764.00
TC-CPREF					20	1 13				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
					85	1 13					P01	
TC-DATA0					20	39 39				TO TAPE DECK GRP27, ELM02	P13	
					20	40 39				OPTION INT. SYNCHRONIZER	P14	
					20	41 39				CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20	42 39				CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27	2 39				FROM GRP20, ELM39	P02	
TC-DATA1					20	39 37				TO TAPE DECK GRP27, ELM02	P13	
					20	40 37				OPTION INT. SYNCHRONIZER	P14	
					20	41 38				CAPSTAN MOTOR INTERFACE	J05	1.811.775.00

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF					20 42 38					CAPSTAN CONTROL UNIT	J06	1.820.764.00
TC-DATA1					27 2 37					FROM GRP20, ELM39	P02	
TC-DATA2					20 39 35					TO TAPE DECK GRP27, ELM02	P13	
					20 40 35					OPTION INT. SYNCHRONIZER	P14	
					20 41 37					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 37					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 35					FROM GRP20, ELM39	P02	
TC-DATA3					20 39 33					TO TAPE DECK GRP27, ELM02	P13	
					20 40 33					OPTION INT. SYNCHRONIZER	P14	
					20 41 36					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 36					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 33					FROM GRP20, ELM39	P02	
TC-DATA4					20 39 31					TO TAPE DECK GRP27, ELM02	P13	
					20 40 31					OPTION INT. SYNCHRONIZER	P14	
					20 41 35					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 35					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 31					FROM GRP20, ELM39	P02	
TC-DATA5					20 39 29					TO TAPE DECK GRP27, ELM02	P13	
					20 40 29					OPTION INT. SYNCHRONIZER	P14	
					20 41 34					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 34					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 29					FROM GRP20, ELM39	P02	
TC-DATA6					20 39 27					TO TAPE DECK GRP27, ELM02	P13	
					20 40 27					OPTION INT. SYNCHRONIZER	P14	
					20 41 33					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 33					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 27					FROM GRP20, ELM39	P02	
TC-DATA7					20 39 25					TO TAPE DECK GRP27, ELM02	P13	
					20 40 25					OPTION INT. SYNCHRONIZER	P14	
					20 41 32					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 32					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 25					FROM GRP20, ELM39	P02	
TC-ENB					20 39 17					TO TAPE DECK GRP27, ELM02	P13	
					20 40 17					OPTION INT. SYNCHRONIZER	P14	
					20 41 28					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 28					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 17					FROM GRP20, ELM39	P02	
TC-ENBG					20 39 7					TO TAPE DECK GRP27, ELM02	P13	
					20 40 7					OPTION INT. SYNCHRONIZER	P14	
					20 41 11					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 11					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 7					FROM GRP20, ELM39	P02	
TC-EREF					20 41 14					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 14					CAPSTAN CONTROL UNIT	J06	1.820.764.00

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 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TC-HALL1					84 1 4				F	FROM GRP85, ELM02	J01	
					85 2 4				M	TO GRP84, ELM01	P02	
TC-HALL2					84 1 7				F	FROM GRP85, ELM02	J01	
					85 2 7				M	TO GRP84, ELM01	P02	
TC-HALL3					84 1 10				F	FROM GRP85, ELM02	J01	
					85 2 10				M	TO GRP84, ELM01	P02	
TC-INEX					20 41 9					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 9					CAPSTAN CONTROL UNIT	J06	1.820.764.00
TC-IRQ					20 39 5					TO TAPE DECK GRP27, ELM02	P13	
					20 40 5					OPTION INT. SYNCHRONIZER	P14	
					20 41 13					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 13					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 5					FROM GRP20, ELM39	P02	
TC-REF					20 41 8					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 8					CAPSTAN CONTROL UNIT	J06	1.820.764.00
TC-REFP					20 41 25					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 3					CAPSTAN CONTROL UNIT	J06	1.820.764.00
TC-RESMP					20 39 9					TO TAPE DECK GRP27, ELM02	P13	
					20 40 9					OPTION INT. SYNCHRONIZER	P14	
					20 41 10					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 10					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 9					FROM GRP20, ELM39	P02	
TC-RW					20 39 15					TO TAPE DECK GRP27, ELM02	P13	
					20 40 15					OPTION INT. SYNCHRONIZER	P14	
					20 41 27					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 27					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 15					FROM GRP20, ELM39	P02	
TC-SL1					20 39 11					TO TAPE DECK GRP27, ELM02	P13	
					20 40 11					OPTION INT. SYNCHRONIZER	P14	
					20 41 24					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 24					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 11					FROM GRP20, ELM39	P02	
TC-SL2					20 41 23					CAPSTAN MOTOR INTERFACE	J05	1.811.775.00
					20 42 23					CAPSTAN CONTROL UNIT	J06	1.820.764.00
TC-SL3					20 39 1					TO TAPE DECK GRP27, ELM02	P13	
					20 40 1					OPTION INT. SYNCHRONIZER	P14	
					20 42 16					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 1					FROM GRP20, ELM39	P02	
TC-SL4					20 39 3					TO TAPE DECK GRP27, ELM02	P13	
					20 40 3					OPTION INT. SYNCHRONIZER	P14	
					20 42 15					CAPSTAN CONTROL UNIT	J06	1.820.764.00
					27 2 3					FROM GRP20, ELM39	P02	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TD-WDIRR				25	7	36				FROM GRP26, ELM01	P02	
				26	1	36			L	TO GRP25, ELM07/GRP27, ELM03		
				27	3	36				FROM GRP26, ELM01	P03	
TD-YTRSP				25	3	7				TAPE TRANSPARENT	P08	
				25	4	12				USER	P06	
TD-24VSC				24	3	20				FROM GRP26, ELM02	P01	
				25	8	20			L	FROM GRP 26, ELM02	P01	
				26	2	20				TO GRP24, ELM03/GRP25, ELM08		
TD-76K8				24	3	11				FROM GRP26, ELM02	P01	
				25	8	11			L	FROM GRP 26, ELM02	P01	
				26	2	11				TO GRP24, ELM03/GRP25, ELM08		
TDS-CLK				20	2	2				SSDA SYNCHRONIZER	P02	
				20	3	2				TAPE DECK CONTROLLER (GRP27)	P03	
				20	43	19A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				27	1	2				FROM GRP20, ELM03	P01	
TDS-CTS				20	3	3				TAPE DECK CONTROLLER (GRP27)	P03	
				20	43	11B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				27	1	3				FROM GRP20, ELM03	P01	
TDS-DTR				20	3	5				TAPE DECK CONTROLLER (GRP27)	P03	
				20	43	11A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				27	1	5				FROM GRP20, ELM03	P01	
TDS-RX				20	3	4				TAPE DECK CONTROLLER (GRP27)	P03	
				20	43	10A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				27	1	4				FROM GRP20, ELM03	P01	
TDS-TX				20	3	6				TAPE DECK CONTROLLER (GRP27)	P03	
				20	43	10B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				27	1	6				FROM GRP20, ELM03	P01	
TL-A0				52	4	6				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	6				FROM GRP52, ELM04	P04	
TL-CS				52	4	3				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	3				FROM GRP52, ELM04	P04	
TL-D0				52	4	7				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	7				FROM GRP52, ELM04	P04	
TL-D1				52	4	8				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	8				FROM GRP52, ELM04	P04	
TL-D2				52	4	9				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	9				FROM GRP52, ELM04	P04	
TL-D3				52	4	10				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	10				FROM GRP52, ELM04	P04	
TL-D4				52	4	11				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	11				FROM GRP52, ELM04	P04	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TL-D5				52	4	12				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	12				FROM GRP52, ELM04	P04	
TL-D6				52	4	13				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	13				FROM GRP52, ELM04	P04	
TL-D7				52	4	14				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	14				FROM GRP52, ELM04	P04	
TL-ENB				52	4	4				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	4				FROM GRP52, ELM04	P04	
TL-RESET				52	4	15				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	15				FROM GRP52, ELM04	P04	
TL-WR				52	4	5				CONNECTOR LCD DISPLAY UNIT	P04	
				54	1	5				FROM GRP52, ELM04	P04	
TM-A				50	2	20				FROM GRP52, ELM02	P02	
				52	2	20				CONNECTOR COMMAND UNIT	P03	
TM-ADR0				20	43	28B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	31				MP-UNIT MASTER	J08	1.811.786.00
				20	45	31				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	24A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
TM-ADR1				20	43	28A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	30				MP-UNIT MASTER	J08	1.811.786.00
				20	45	30				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	23A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
TM-ADR2				20	43	27B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	29				MP-UNIT MASTER	J08	1.811.786.00
				20	45	29				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	22A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
TM-ADR3				20	43	23B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	6				MP-UNIT MASTER	J08	1.811.786.00
				20	45	17				SMPT/EBU INTERFACE	J09	1.820.751.00
TM-B				50	2	18				FROM GRP52, ELM02	P02	
				52	2	18				CONNECTOR COMMAND UNIT	P03	
TM-BUSSW				20	44	8				MP-UNIT MASTER	J08	1.811.786.00
				20	45	15				SMPT/EBU INTERFACE	J09	1.820.751.00
TM-C				50	2	21				FROM GRP52, ELM02	P02	
				52	2	21				CONNECTOR COMMAND UNIT	P03	
TM-CUE1				51	1	4				FROM GRP52, ELM03		
				52	3	4				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
TM-CUE2				51	1	6				FROM GRP52, ELM03		
				52	3	6				CONNECTOR PUSHBUTTON ASSEMBLY	P02	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TM-C307K				20	44	22				MP-UNIT MASTER	J08	1.811.786.00
				20	46	19B				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				20	47	25				TIME CODE WRITE/READ UNIT	J11	1.820.721.81
				20	48	25				TIME CODE DELAY UNIT	J12	1.820.722.81
				20	49	25				HF-DRIVER, CH 1	J13	1.820.713.00
				20	50	25				RECORD AMPLIFIER, CH 1	J14	1.820.712.81
				20	51	25				REPRODUCE AMPLIFIER, CH 1	J15	1.820.710.81
				20	52	25				LINE AMPLIFIER, CH 1	J16	1.820.714.81
				20	53	25				MONO-STEREO-SWITCH	J17	1.820.720.00
				20	54	25				HF-DRIVER, CH 2	J18	1.820.713.00
				20	55	25				RECORD AMPLIFIER, CH 2	J19	1.820.712.81
				20	56	25				REPRODUCE AMPLIFIER, CH 2	J20	1.820.710.81
				20	57	25				LINE AMPLIFIER, CH 2	J21	1.820.714.81
TM-C614K				20	44	7				MP-UNIT MASTER	J08	1.811.786.00
TM-C76K	9	9		19	1	4			F	FROM GRP30, ELM02	J01	
				19	2	4			M	TO GRP20, ELM10	P01	
				20	1	15				CAPSTAN MOTOR DRIVE AMPLIFIER	P01	
				20	10	4			F	FROM STABILIZER GRP30, ELM02	J01	
				20	44	16				MP-UNIT MASTER	J08	1.811.786.00
				30	2	4			M	OUTPUT (TO GRP20, ELM10)	P01	
				85	1	15					P01	
TM-C9630				20	44	17				MP-UNIT MASTER	J08	1.811.786.00
TM-D				50	2	22				FROM GRP52, ELM02	P02	
				52	2	22				CONNECTOR COMMAND UNIT	P03	
TM-DADR0				20	4	19				TAPE DECK DISPLAY DRIVER	P04	
				20	5	19				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	8A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				35	2	19				FROM GRP20, ELM05	P02	
				52	1	19				FROM GRP20, ELM04	P01	
TM-DADR1				20	4	17				TAPE DECK DISPLAY DRIVER	P04	
				20	43	7A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				52	1	17				FROM GRP20, ELM04	P01	
TM-DADR2				20	4	15				TAPE DECK DISPLAY DRIVER	P04	
				20	43	6A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				52	1	15				FROM GRP20, ELM04	P01	
TM-DATA0				20	4	39				TAPE DECK DISPLAY DRIVER	P04	
				20	5	39				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	32B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	39				MP-UNIT MASTER	J08	1.811.786.00
				20	45	39				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	32A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				35	2	39				FROM GRP20, ELM05	P02	
				52	1	39				FROM GRP20, ELM04	P01	
TM-DATA1				20	4	37				TAPE DECK DISPLAY DRIVER	P04	
				20	5	37				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	32A				MASTER SERIAL INTERFACE	J07	1.820.753.00

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF				20	44	38				MP-UNIT MASTER	J08	1.811.786.00
TM-DATA1				20	45	38				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	31A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				35	2	37				FROM GRP20, ELM05	P02	
				52	1	37				FROM GRP20, ELM04	P01	
TM-DATA2				20	4	35				TAPE DECK DISPLAY DRIVER	P04	
				20	5	35				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	31B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	37				MP-UNIT MASTER	J08	1.811.786.00
				20	45	37				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	30A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				35	2	35				FROM GRP20, ELM05	P02	
				52	1	35				FROM GRP20, ELM04	P01	
TM-DATA3				20	4	33				TAPE DECK DISPLAY DRIVER	P04	
				20	5	33				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	31A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	36				MP-UNIT MASTER	J08	1.811.786.00
				20	45	36				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	29A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				35	2	33				FROM GRP20, ELM05	P02	
				52	1	33				FROM GRP20, ELM04	P01	
TM-DATA4				20	4	31				TAPE DECK DISPLAY DRIVER	P04	
				20	5	31				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	30B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	35				MP-UNIT MASTER	J08	1.811.786.00
				20	45	35				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	28A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				35	2	31				FROM GRP20, ELM05	P02	
				52	1	31				FROM GRP20, ELM04	P01	
TM-DATA5				20	4	29				TAPE DECK DISPLAY DRIVER	P04	
				20	5	29				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	30A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	34				MP-UNIT MASTER	J08	1.811.786.00
				20	45	34				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	27A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				35	2	29				FROM GRP20, ELM05	P02	
				52	1	29				FROM GRP20, ELM04	P01	
TM-DATA6				20	4	27				TAPE DECK DISPLAY DRIVER	P04	
				20	5	27				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	29B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	33				MP-UNIT MASTER	J08	1.811.786.00
				20	45	33				SMPT/EBU INTERFACE	J09	1.820.751.00
				20	46	26A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				35	2	27				FROM GRP20, ELM05	P02	
				52	1	27				FROM GRP20, ELM04	P01	
TM-DATA7				20	4	25				TAPE DECK DISPLAY DRIVER	P04	
				20	5	25				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	29A				MASTER SERIAL INTERFACE	J07	1.820.753.00

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF TM-DATA7				20	44	32				MP-UNIT MASTER	J08	1.811.786.00
				20	45	32				SMPTE/EBU INTERFACE	J09	1.820.751.00
				20	46	25A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
				35	2	25				FROM GRP20, ELM05	P02	
				52	1	25				FROM GRP20, ELM04	P01	
TM-DENB				20	4	13				TAPE DECK DISPLAY DRIVER	P04	
				20	5	13				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	5A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				35	2	13				FROM GRP20, ELM05	P02	
				52	1	13				FROM GRP20, ELM04	P01	
TM-DP				50	2	19				FROM GRP52, ELM02	P02	
				52	2	19				CONNECTOR COMMAND UNIT	P03	
TM-DRENB				20	44	12				MP-UNIT MASTER	J08	1.811.786.00
				20	45	12				SMPTE/EBU INTERFACE	J09	1.820.751.00
TM-DRES				20	4	9				TAPE DECK DISPLAY DRIVER	P04	
				20	5	9				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	3A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				35	2	9				FROM GRP20, ELM05	P02	
				52	1	9				FROM GRP20, ELM04	P01	
TM-DRW				20	4	11				TAPE DECK DISPLAY DRIVER	P04	
				20	5	11				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	4A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				35	2	11				FROM GRP20, ELM05	P02	
				52	1	11				FROM GRP20, ELM04	P01	
TM-DSL4				20	4	7				TAPE DECK DISPLAY DRIVER	P04	
				20	43	1A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				52	1	7				FROM GRP20, ELM04	P01	
TM-DSL5				20	5	7				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	2A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				35	2	7				FROM GRP20, ELM05	P02	
TM-D0				50	2	35				FROM GRP52, ELM02	P02	
				52	2	35				CONNECTOR COMMAND UNIT	P03	
TM-D1				50	2	34				FROM GRP52, ELM02	P02	
				52	2	34				CONNECTOR COMMAND UNIT	P03	
TM-D2				50	2	33				FROM GRP52, ELM02	P02	
				52	2	33				CONNECTOR COMMAND UNIT	P03	
TM-D3				50	2	32				FROM GRP52, ELM02	P02	
				52	2	32				CONNECTOR COMMAND UNIT	P03	
TM-D4				50	2	31				FROM GRP52, ELM02	P02	
				52	2	31				CONNECTOR COMMAND UNIT	P03	
TM-D5				50	2	30				FROM GRP52, ELM02	P02	
				52	2	30				CONNECTOR COMMAND UNIT	P03	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TM-D6				50	2	29				FROM GRP52, ELM02	P02	
				52	2	29				CONNECTOR COMMAND UNIT	P03	
TM-D7				50	2	28				FROM GRP52, ELM02	P02	
				52	2	28				CONNECTOR COMMAND UNIT	P03	
TM-D8				50	2	27				FROM GRP52, ELM02	P02	
				52	2	27				CONNECTOR COMMAND UNIT	P03	
TM-D9				50	2	26				FROM GRP52, ELM02	P02	
				52	2	26				CONNECTOR COMMAND UNIT	P03	
TM-E				50	2	24				FROM GRP52, ELM02	P02	
				52	2	24				CONNECTOR COMMAND UNIT	P03	
TM-ENB				20	43	27A				MASTER SERIAL INTERFACE	J07	1.820.753.00
				20	44	28				MP-UNIT MASTER	J08	1.811.786.00
				20	45	28				SMPTE/EBU INTERFACE	J09	1.820.751.00
				20	46	21A				MASTER PERIPHERY CONTR.	J10	1.820.728.00
TM-ENO				51	1	7				FROM GRP52, ELM03		
				52	3	7				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
TM-EN1				50	2	9				FROM GRP52, ELM02	P02	
				52	2	9				CONNECTOR COMMAND UNIT	P03	
TM-EN2				50	2	8				FROM GRP52, ELM02	P02	
				52	2	8				CONNECTOR COMMAND UNIT	P03	
TM-EN3				50	1	7				TO GRP53, ELM01	P01	
				50	2	7				FROM GRP52, ELM02	P02	
				52	2	7				CONNECTOR COMMAND UNIT	P03	
				53	1	7				FROM GRP50, ELM01	P01	
TM-EN4				50	1	6				TO GRP53, ELM01	P01	
				50	2	6				FROM GRP52, ELM02	P02	
				52	2	6				CONNECTOR COMMAND UNIT	P03	
				53	1	6				FROM GRP50, ELM01	P01	
TM-F				50	2	23				FROM GRP52, ELM02	P02	
				52	2	23				CONNECTOR COMMAND UNIT	P03	
TM-G				50	2	25				FROM GRP52, ELM02	P02	
				52	2	25				CONNECTOR COMMAND UNIT	P03	
TM-IADRO				20	4	20				TAPE DECK DISPLAY DRIVER	P04	
				20	5	20				PARALLEL REMOTE IF (GRP35)	P05	
				20	43	8B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				35	2	20				FROM GRP20, ELM05	P02	
				52	1	20				FROM GRP20, ELM04	P01	
TM-IADRI				20	4	18				TAPE DECK DISPLAY DRIVER	P04	
				20	43	7B				MASTER SERIAL INTERFACE	J07	1.820.753.00
				52	1	18				FROM GRP20, ELM04	P01	

***** WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 110 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TM-IADR2			20	4	16					TAPE DECK DISPLAY DRIVER	P04	
			20	43	6B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			52	1	16					FROM GRP20, ELM04	P01	
TM-IENB			20	4	14					TAPE DECK DISPLAY DRIVER	P04	
			20	5	14					PARALLEL REMOTE IF (GRP35)	P05	
			20	43	5B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			35	2	14					FROM GRP20, ELM05	P02	
			52	1	14					FROM GRP20, ELM04	P01	
TM-IRES			20	4	10					TAPE DECK DISPLAY DRIVER	P04	
			20	5	10					PARALLEL REMOTE IF (GRP35)	P05	
			20	43	3B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			35	2	10					FROM GRP20, ELM05	P02	
			52	1	10					FROM GRP20, ELM04	P01	
TM-IRQ			20	43	24B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			20	44	13					MP-UNIT MASTER	J08	1.811.786.00
TM-IRM			20	4	12					TAPE DECK DISPLAY DRIVER	P04	
			20	5	12					PARALLEL REMOTE IF (GRP35)	P05	
			20	43	4B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			35	2	12					FROM GRP20, ELM05	P02	
			52	1	12					FROM GRP20, ELM04	P01	
TM-ISL4			20	4	8					TAPE DECK DISPLAY DRIVER	P04	
			20	43	1B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			52	1	8					FROM GRP20, ELM04	P01	
TM-ISL5			20	5	8					PARALLEL REMOTE IF (GRP35)	P05	
			20	43	2B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			35	2	8					FROM GRP20, ELM05	P02	
TM-KBIR			20	4	23					TAPE DECK DISPLAY DRIVER	P04	
			20	43	14B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			52	1	23					FROM GRP20, ELM04	P01	
TM-L1			50	2	37					FROM GRP52, ELM02	P02	
			52	2	37					CONNECTOR COMMAND UNIT	P03	
TM-L2			50	2	36					FROM GRP52, ELM02	P02	
			52	2	36					CONNECTOR COMMAND UNIT	P03	
TM-L3			50	2	38					FROM GRP52, ELM02	P02	
			52	2	38					CONNECTOR COMMAND UNIT	P03	
TM-L4			50	2	39					FROM GRP52, ELM02	P02	
			52	2	39					CONNECTOR COMMAND UNIT	P03	
TM-L5			50	2	40					FROM GRP52, ELM02	P02	
			52	2	40					CONNECTOR COMMAND UNIT	P03	
TM-NMI			20	44	9					MP-UNIT MASTER	J08	1.811.786.00

***** WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * P A G E 111 *

 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

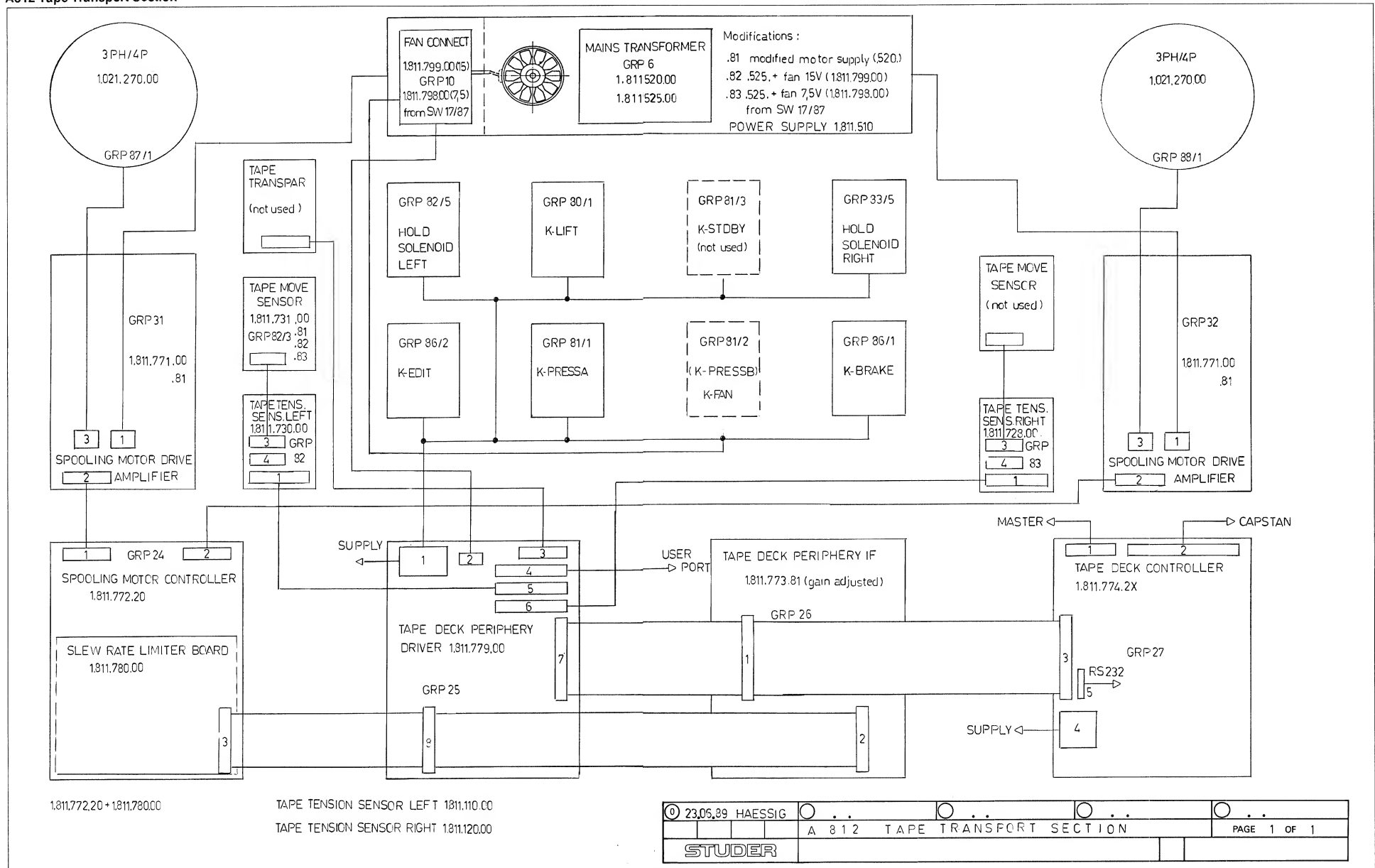
SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TM-REMIR			20	5	21					PARALLEL REMOTE IF (GRP35)	P05	
			20	43	19B					MASTER SERIAL INTERFACE	J07	1.820.753.00
			35	2	21					FROM GRP20, ELM05	P02	
TM-RES			20	43	24A					MASTER SERIAL INTERFACE	J07	1.820.753.00
			20	45	26					SMPT/EBU INTERFACE	J09	1.820.751.00
			20	46	19A					MASTER PERIPHERY CONTR.	J10	1.820.728.00
TM-RE SET			20	43	26A					MASTER SERIAL INTERFACE	J07	1.820.753.00
			20	44	26					MP-UNIT MASTER	J08	1.811.786.00
TM-RESMP			20	43	23A					MASTER SERIAL INTERFACE	J07	1.820.753.00
			20	44	5					MP-UNIT MASTER	J08	1.811.786.00
TM-RL0			50	2	12					FROM GRP52, ELM02	P02	
			51	1	5					FROM GRP52, ELM03	P03	
			52	2	12					CONNECTOR COMMAND UNIT	P03	
			52	3	5					CONNECTOR PUSHBUTTON ASSEMBLY	P02	
TM-RL1			50	2	13					FROM GRP52, ELM02	P02	
			51	1	3					FROM GRP52, ELM03	P03	
			52	2	13					CONNECTOR COMMAND UNIT	P03	
			52	3	3					CONNECTOR PUSHBUTTON ASSEMBLY	P02	
TM-RL2			50	1	14					TO GRP53, ELM01	P01	
			50	2	14					FROM GRP52, ELM02	P02	
			51	1	2					FROM GRP52, ELM03	P03	
			52	2	14					CONNECTOR COMMAND UNIT	P03	
			52	3	2					CONNECTOR PUSHBUTTON ASSEMBLY	P02	
			53	1	14					FROM GRP50, ELM01	P01	
TM-RL3			50	1	13					TO GRP53, ELM01	P01	
			50	2	15					FROM GRP52, ELM02	P02	
			51	1	1					FROM GRP52, ELM03	P03	
			52	2	15					CONNECTOR COMMAND UNIT	P03	
			52	3	1					CONNECTOR PUSHBUTTON ASSEMBLY	P02	
			53	1	13					FROM GRP50, ELM01	P01	
TM-RL4			50	1	16					TO GRP53, ELM01	P01	
			50	2	16					FROM GRP52, ELM02	P02	
			52	2	16					CONNECTOR COMMAND UNIT	P03	
			53	1	16					FROM GRP50, ELM01	P01	
TM-RL5			50	1	15					TO GRP53, ELM01	P01	
			50	2	17					FROM GRP52, ELM02	P02	
			52	2	17					CONNECTOR COMMAND UNIT	P03	
			53	1	15					FROM GRP50, ELM01	P01	
TM-RL6			50	1	10					TO GRP53, ELM01	P01	
			50	2	10					FROM GRP52, ELM02	P02	
			52	2	10					CONNECTOR COMMAND UNIT	P03	
			53	1	10					FROM GRP50, ELM01	P01	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 89/09/18 * 12:22 * PAGE 114 *

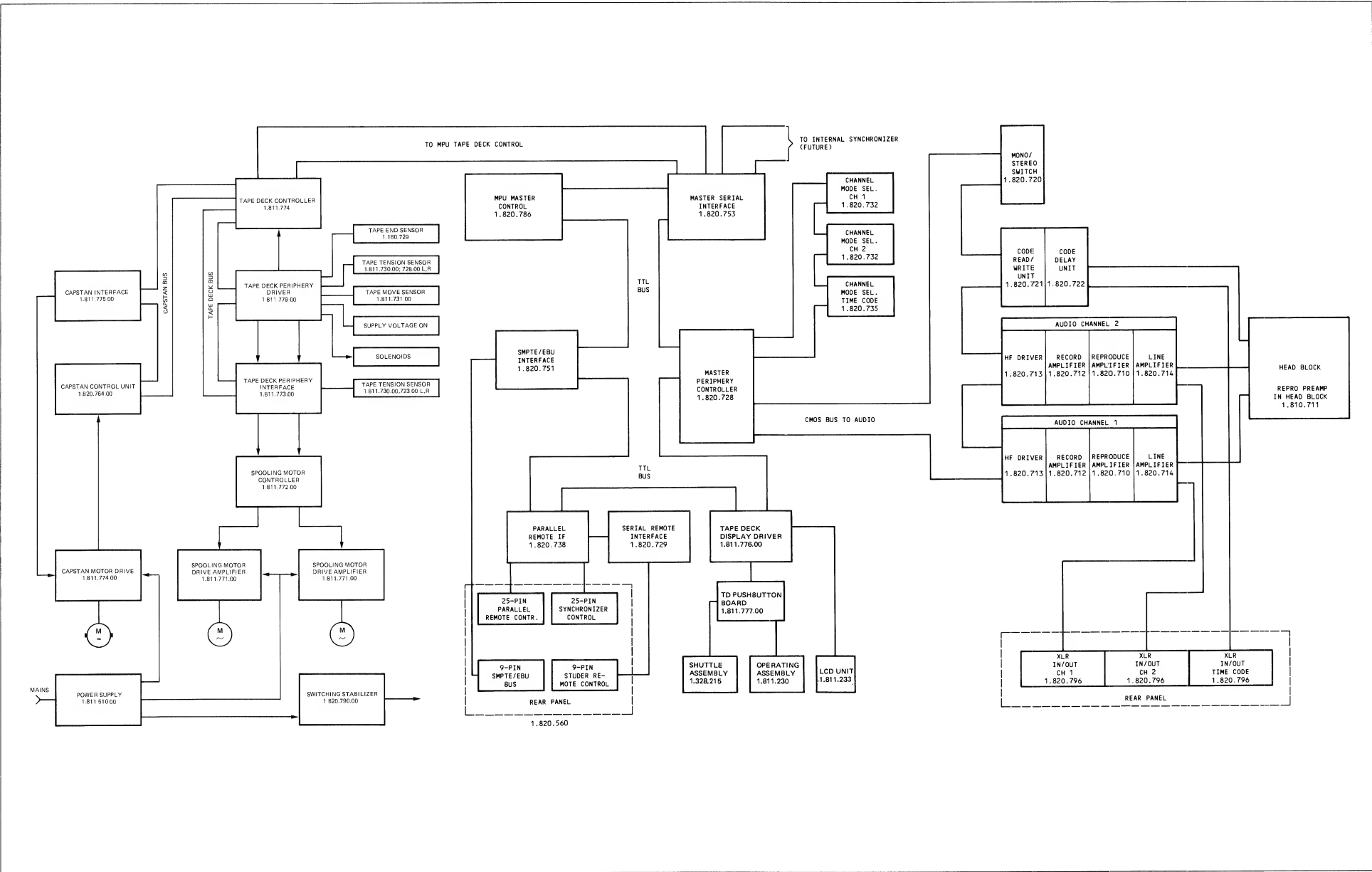
 * 1.811.090.00 * STUDER A 812 * TAPE DECK & AUDIO * 88/05/19 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF 0.0 VCU			52	1	32					FROM GRP20, ELM04	P01	
			52	1	34					FROM GRP20, ELM04	P01	
			52	1	36					FROM GRP20, ELM04	P01	
			52	1	38					FROM GRP20, ELM04	P01	
			52	1	40					FROM GRP20, ELM04	P01	
0.0VREF			24	1	8					TO GRP31, ELM02	P02	
			24	1	10					TO GRP31, ELM02	P02	
			24	2	8					TO GRP32, ELM02	P03	
			24	2	10					TO GRP32, ELM02	P03	
			31	2	8					FROM GRP24, ELM01	P01	
			31	2	10					FROM GRP24, ELM01	P01	
			32	2	8					FROM GRP24, ELM02	P01	
			32	2	10					FROM GRP24, ELM02	P01	
OCAPMOT	4		7	7	4				L	RECTIFIER	D03	70.01.0231
	4		7	11	2				L	CAPACITOR	C07	59.26.7103
	4		7	12	9				M	CONNECTOR TO GRP30, ELM01	P01	
	4		19	1	23				F	FROM GRP30, ELM02	J01	
	4		19	2	23				M	TO GRP20, ELM10	P01	
	4		20	10	23				F	FROM STABILIZER GRP30, ELM02	J01	
	4		20	21	2				U	WIRE FIELD, TO CONN. GRP20, ELM67		1.811.898.00
	6		20	21	3				U	WIRE FIELD, TO CONN. GRP20, ELM67		1.811.898.00
	4		20	67	1				F	CONNECTOR TO GRP85, ELM03	P17	1.811.898.00
	6		20	67	4				F	CONNECTOR TO GRP85, ELM03	P17	1.811.898.00
			30	1	9				F	DC INPUT (FROM GRP07, ELM12)	J01	
			30	2	23				M	OUTPUT (TO GRP20, ELM10)	P01	
			85	3	1				M	SUPPLY (FROM GRP20, ELM72)	P03	
			85	3	4				M	SUPPLY (FROM GRP20, ELM72)	P03	
OPSVTMOT			8	2	5					CONN. SUPPLY CONTROL (GRP25, ELM02)		
			8	2	8					CONN. SUPPLY CONTROL (GRP25, ELM02)		
			8	3	2				F	DC OUTPUT		
			8	3	5				F	DC OUTPUT		
	0		8	6	2				U	WIRE FIELD, FROM RECTIFIERS		
	4		8	6	4				U	WIRE FIELD, FROM RECTIFIERS		
	4		9	1	3				L	RECTIFIER		
	0		9	2	4				L	RECTIFIER		
	0		9	3	2				L	CAPACITOR		
	4		9	4	1				L	CAPACITOR		
	0		11	1	2				M	FROM GRP08, ELM02		
	0		11	1	5				M	FROM GRP08, ELM02		
	0		11	2	5				F	TO GRP31, ELM01 (DRIVE AMP. LEFT)		
	0		11	3	5				F	TO GRP32, ELM01 (DRIVE AMP. RIGHT)		
	5		14	1	5				N	FROM GRP08, ELM03		
	5		14	2	5				N	TO GRP25, ELM02		
			25	2	5					FROM GRP08, ELM03	J02	
			31	1	5				M	SUPPLY (FROM GRP08, ELM02)	J01	
			32	1	5				M	SUPPLY (FROM GRP08, ELM02)	J01	

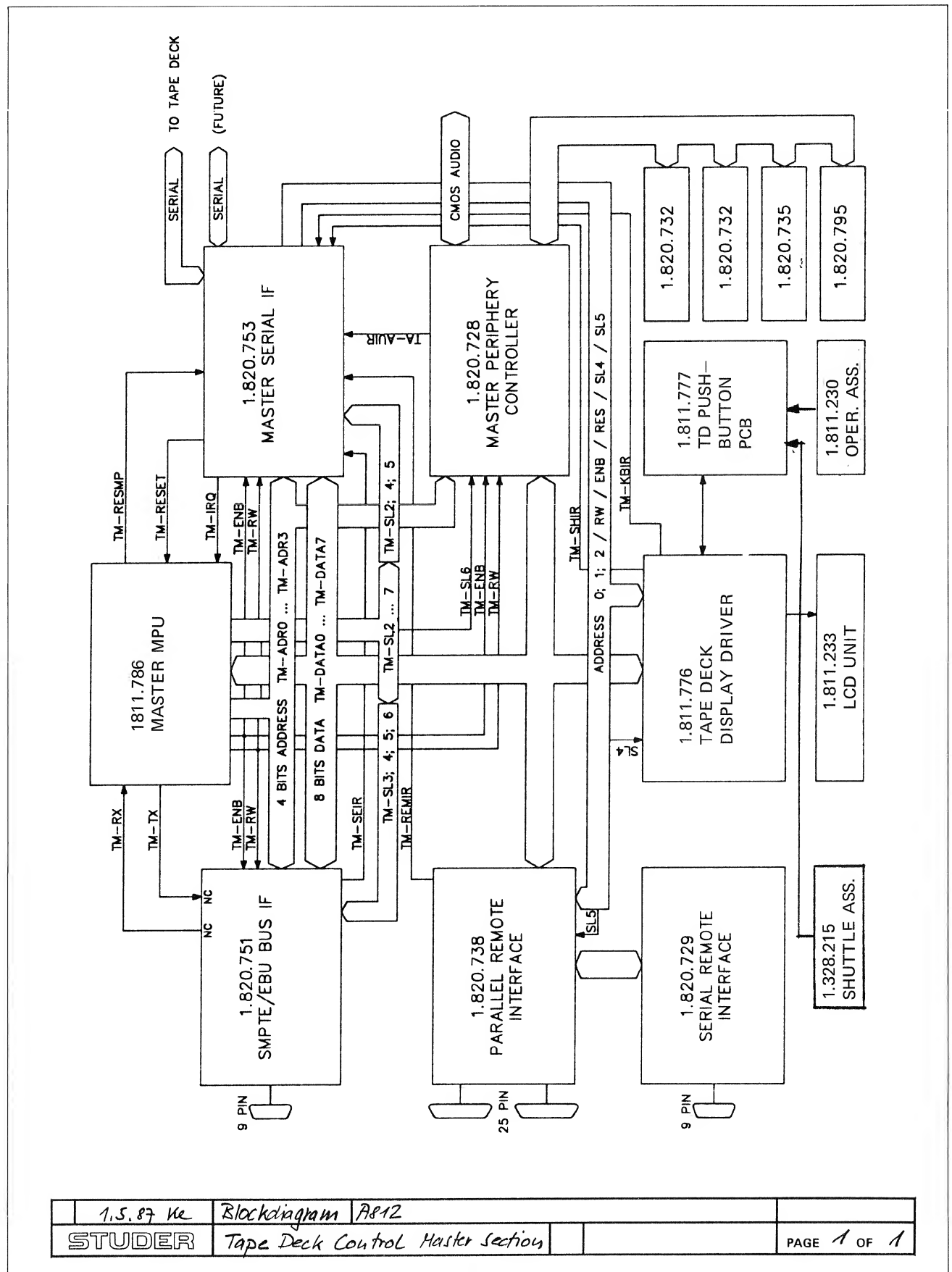
A812 Tape Transport Section



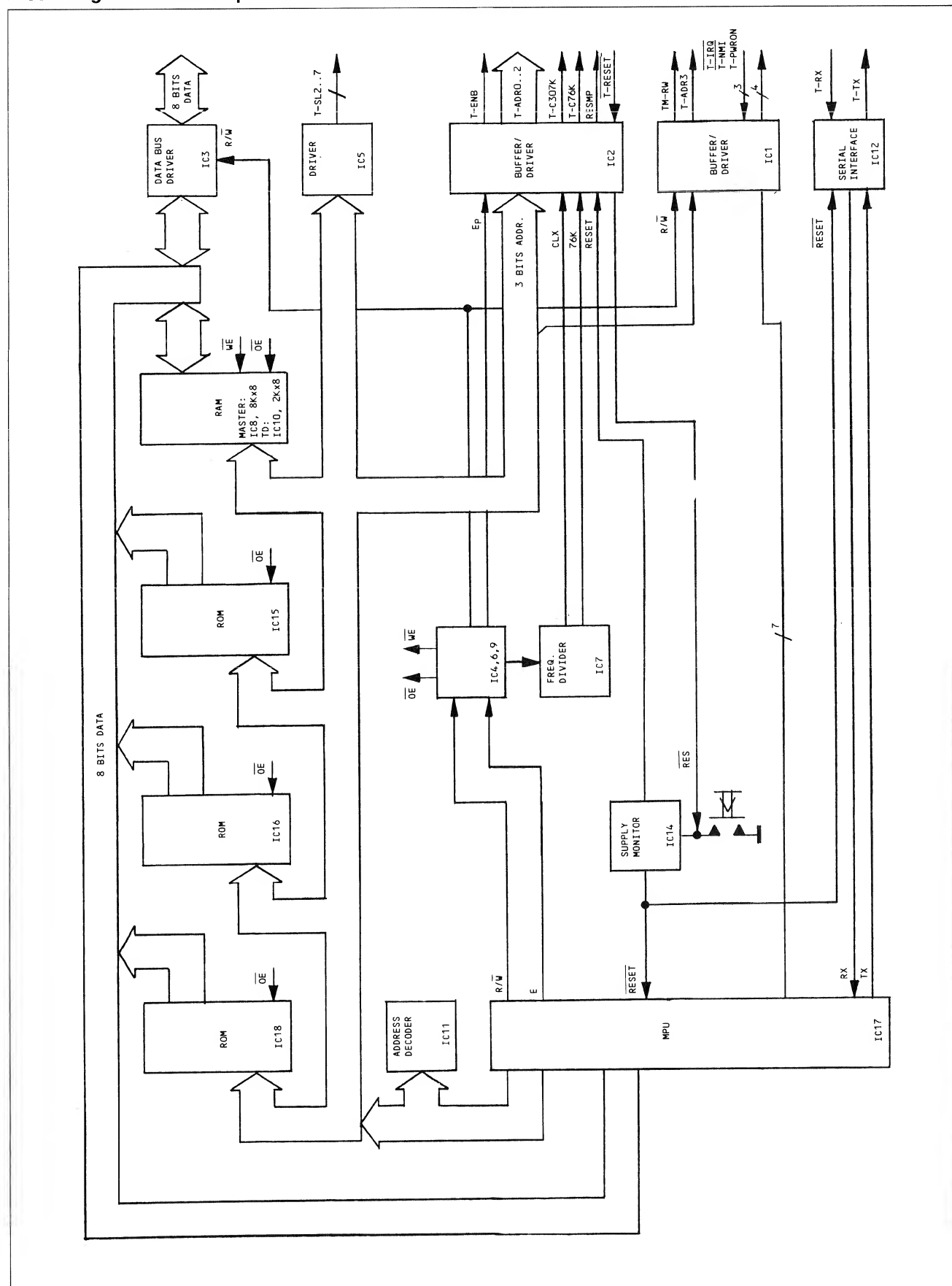
Block Diagram Tape Transport A812



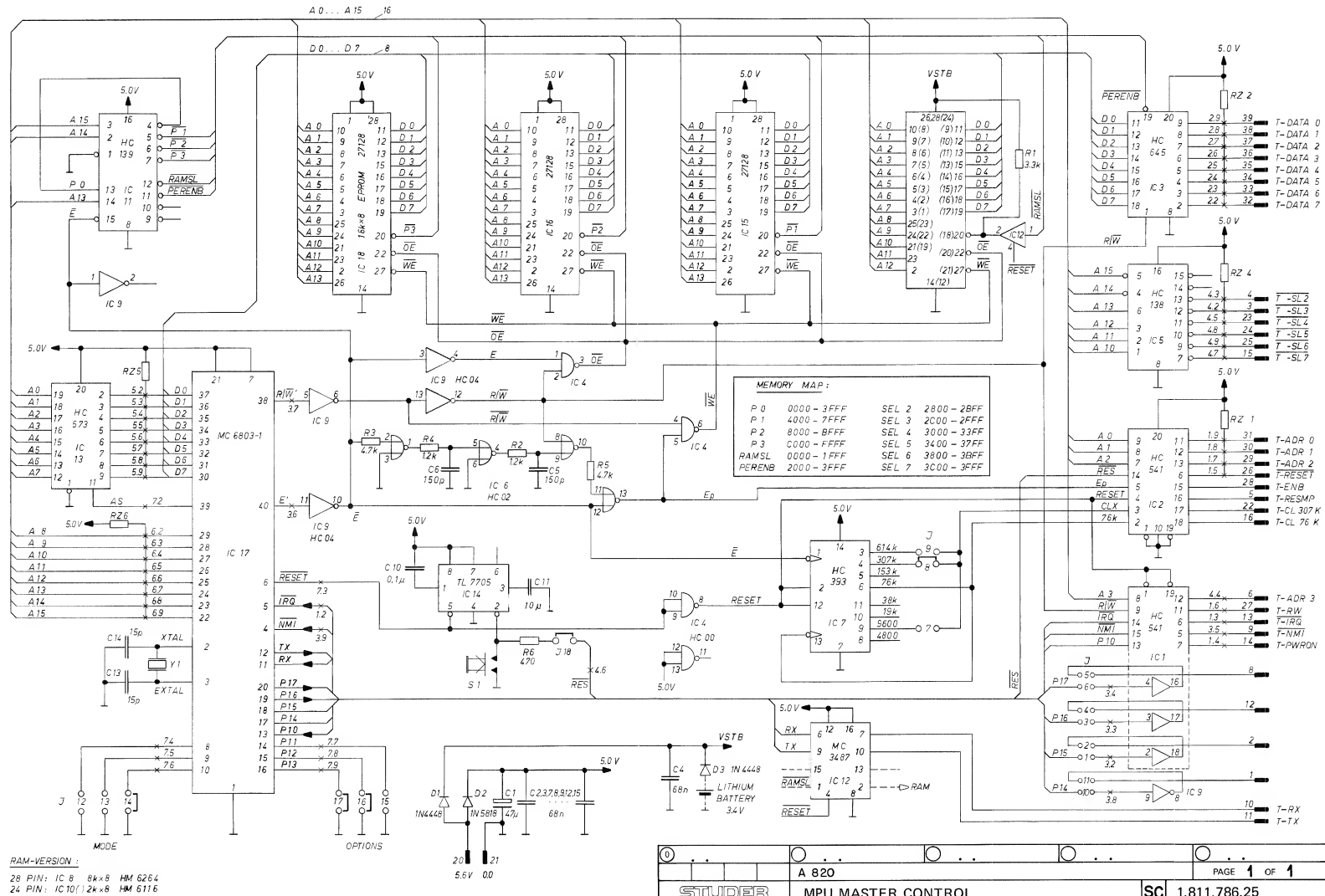
Tape Deck Control Master Section



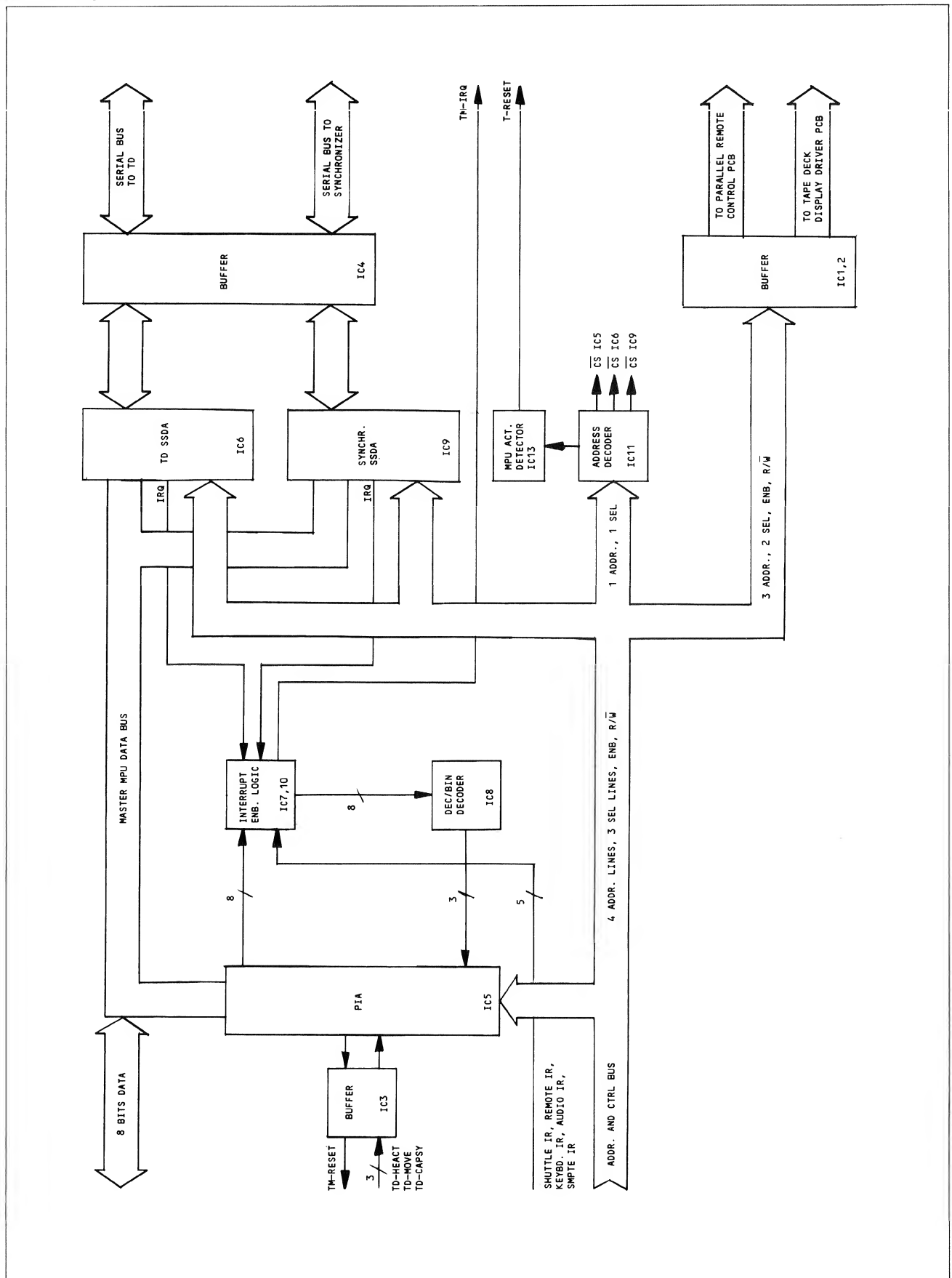
Block Diagram MP Unit Tape Deck Control "ESE" 1.820.785

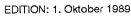


MPU Master Control 1.811.786.25

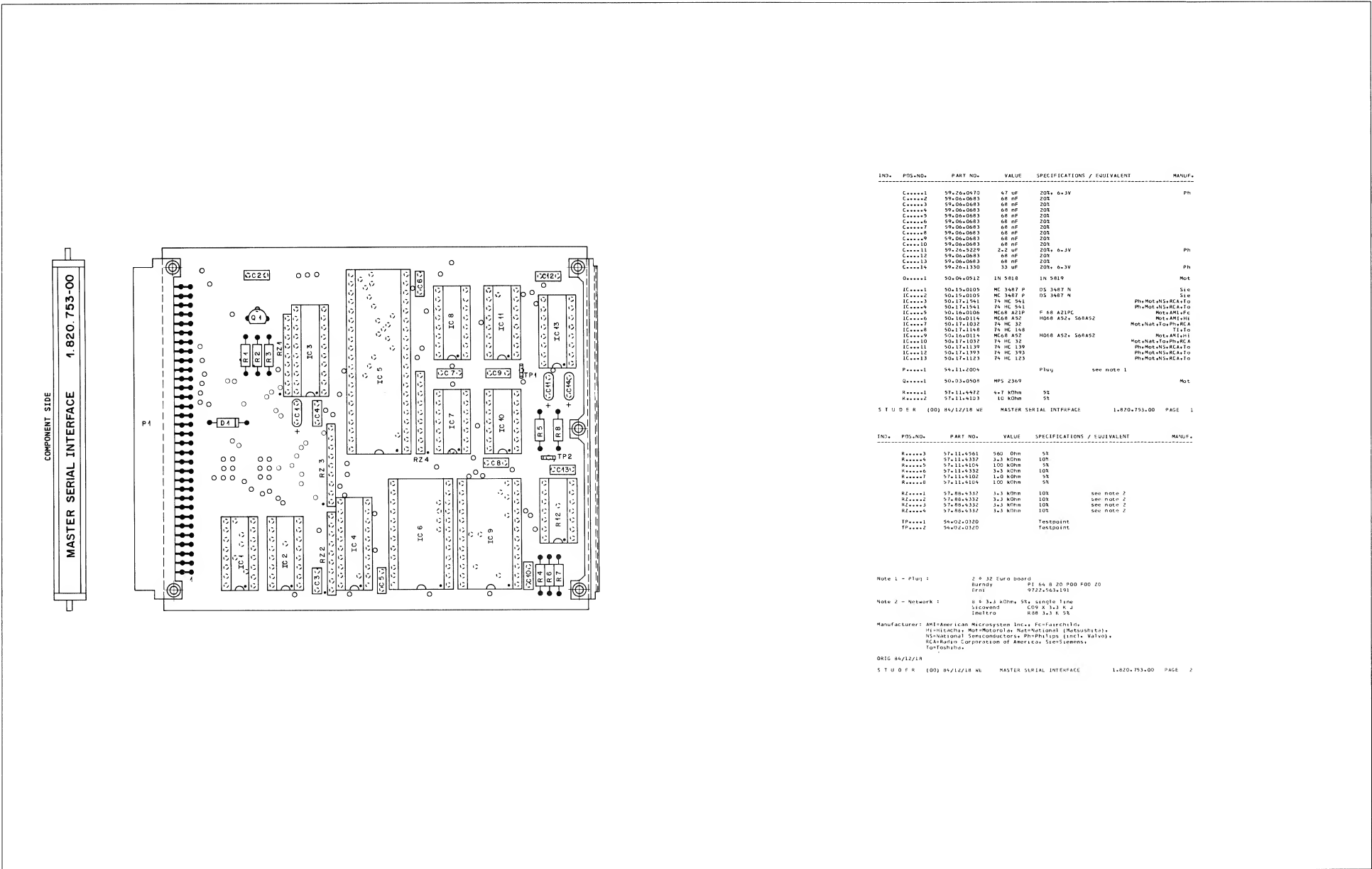


Block Diagram Master Serial Interface PCB "ESE" 1.820.753

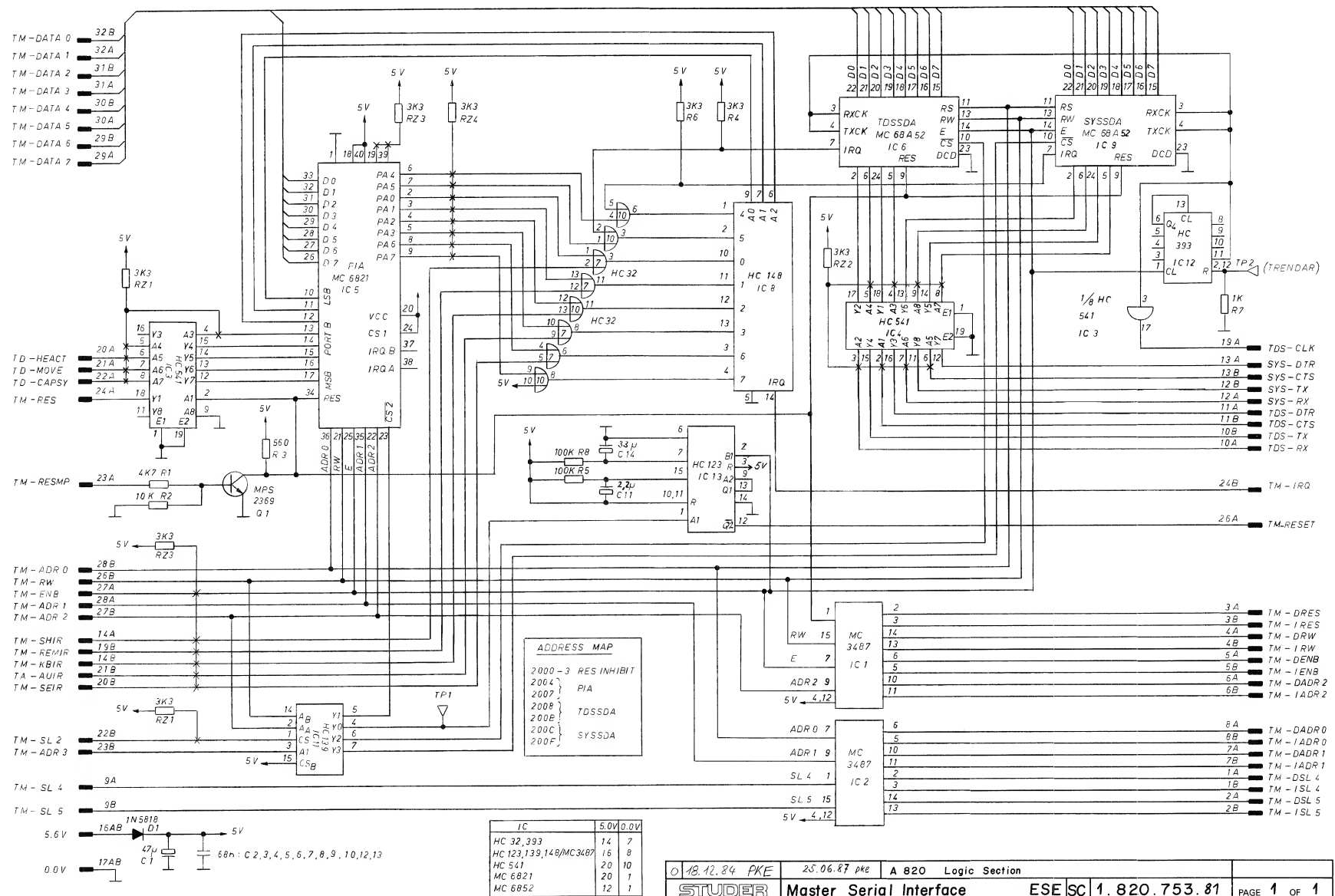


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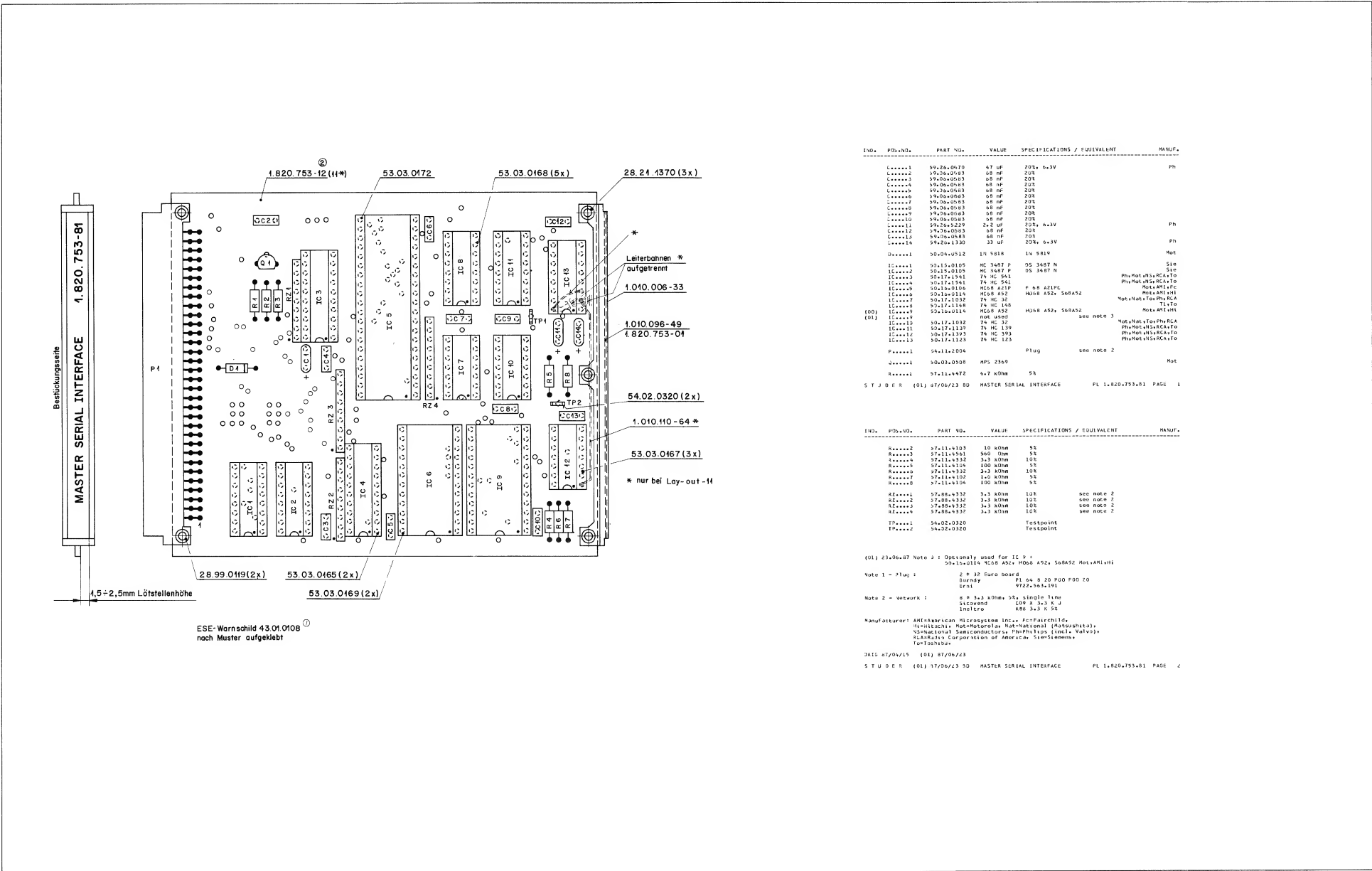
Master Serial Interface 1.820.753-00



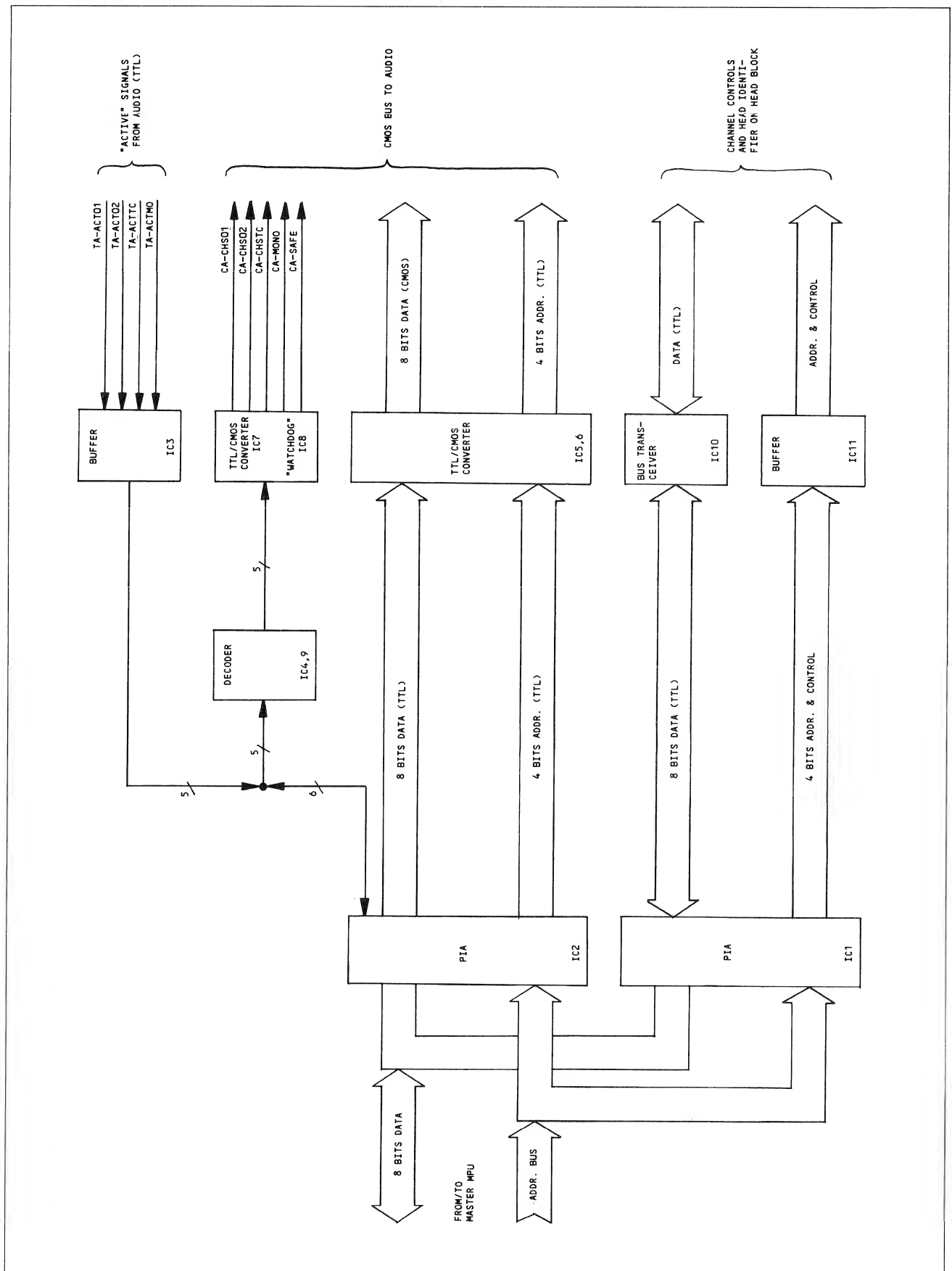
Master Serial Interface ESE 1.820.753.81



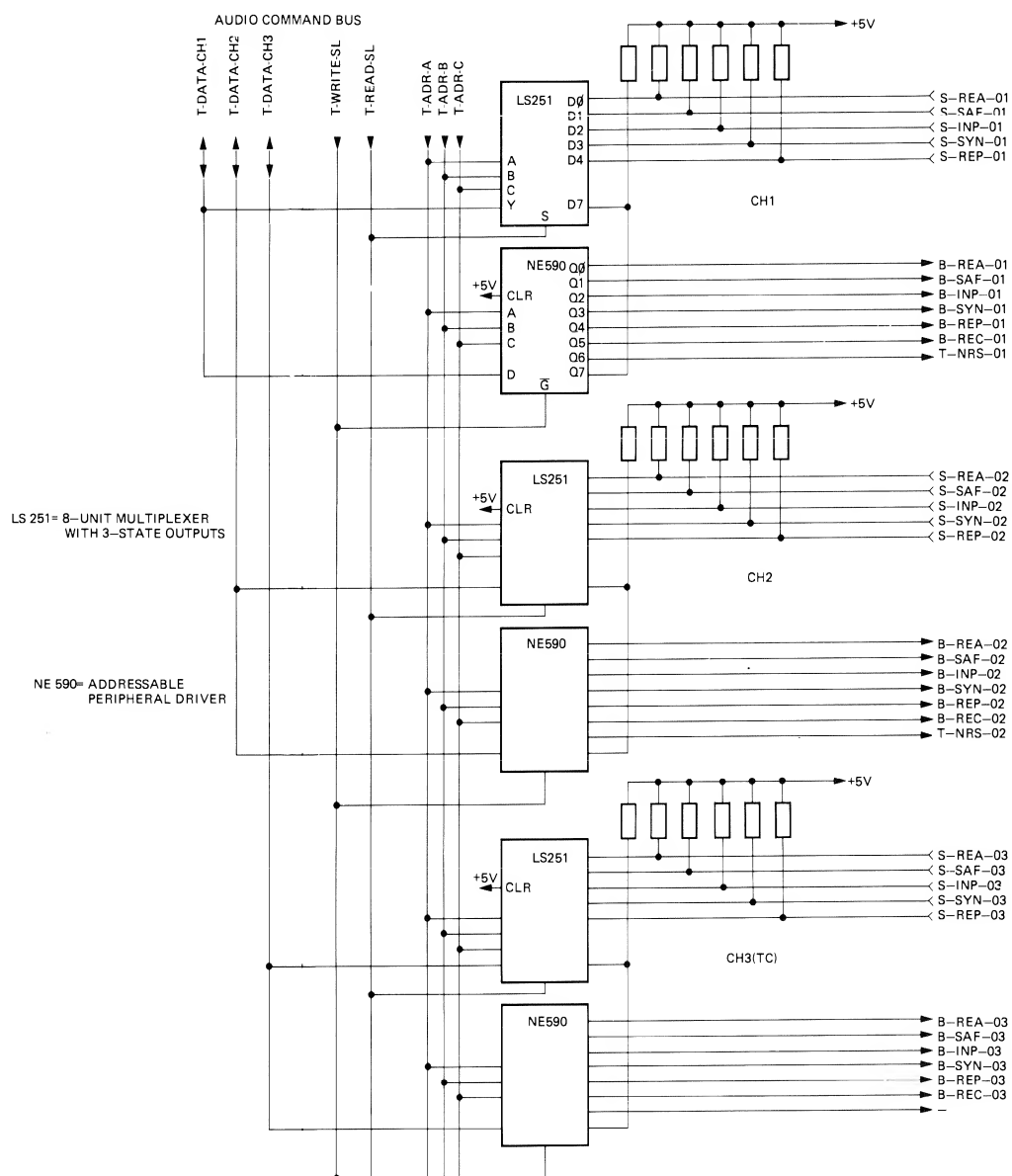
Master Serial Interface ESE 1.820.753.81



Block Diagram Master Peripheral Controller PCB "ESE" 1.820.728

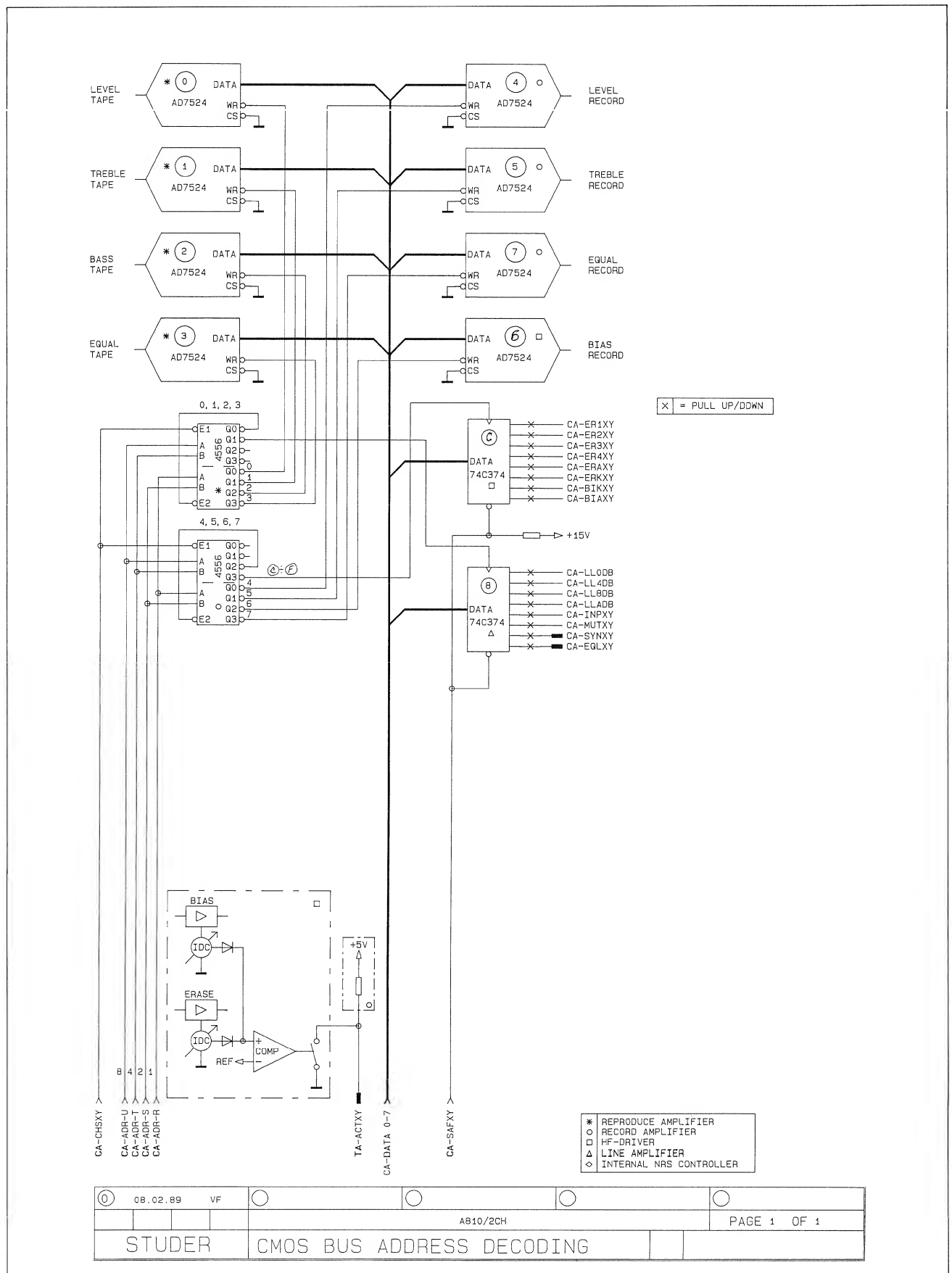


Block Diagram Channel Control

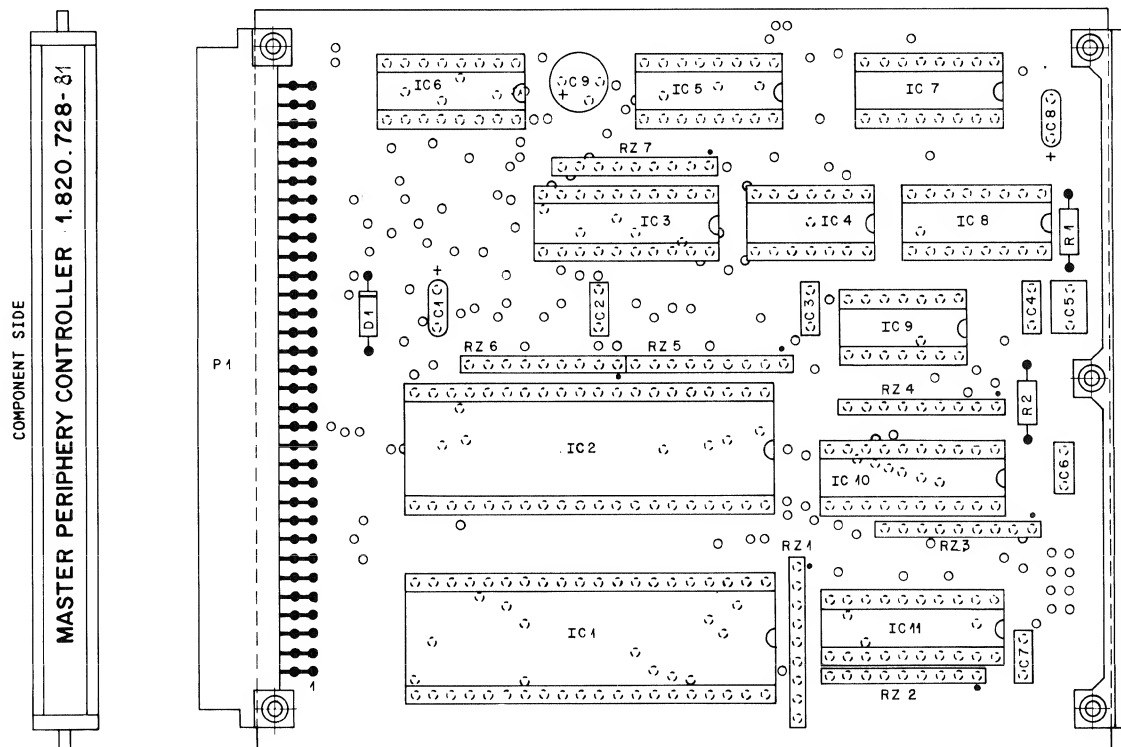


June 83 Ke	A 810	Blockdiagramm		
STUDER	CHANNEL CTRL.		PAGE	OF

Block Diagram C-MOS Bus (Audio)



Master Periphery Controller 1.820.728-81



INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.26.0470	47 uF	-20%, 6.3V, Sa1		Ph	Note 1 - Connector 2932 Euro Print: Burndy Nr. PI 64 B 20 P00 F0 0 20 Erni Nr. 9722-563.191					
C.....2	59.06.0683	68 nF	10%, 63V, PETP								
C.....3	59.06.0683	68 nF	10%, 63V, PETP								
C.....4	59.06.0683	68 nF	10%, 63V, PETP								
C.....5	59.06.0474	470 nF	10%, 63V, PETP								
C.....6	59.06.0683	68 nF	10%, 63V, PETP								
C.....7	59.06.0683	68 nF	10%, 63V, PETP								
C.....8	59.26.0470	47 uF	-20%, 6.3V, Sa1		Ph						
C.....9	59.22.5470	47 uF	-20%, 25V, EI								
O.....1	50.04.0512	1 N 5818	1 N 5818		Mot						
IC.....1	50.16.0106	MC68 A 21P	568 A 21P, F68 A 21P	AMI-Fc, Mot							
IC.....2	50.16.0106	MC68 A 21P	568 A 21P, F68 A 21P	AMI-Fc, Mot							
IC.....3	50.17.1540	74 HC 540		Mot, NS, Ph, RCA, SGS, TI, To							
IC.....4	50.17.1010	74 HC 10		Mot, NS, Ph, RCA, SGS, TI, To							
IC.....5	50.15.0103	MC145048CP		Mot							
IC.....6	50.15.0103	MC145048CP		Mot							
IC.....7	50.15.0103	MC145048CP		Mot							
IC.....8	50.17.1123	74 HC 123		Mot, NS, Ph, RCA, SGS, TI, To							
IC.....9	50.17.1074	74 HC 74		Mot, NS, Ph, RCA, SGS, TI, To							
IC.....10	50.06.0245	SN74LS245N		TI							
IC.....11	50.06.0541	SN74LS541N	74LS541PC	Fc, Mot, TI							
P.....1	54.11.2004		see note 1								
R.....1	57.11.4105	1 MOhm	25								
R.....2	57.11.4103	10 kOhm	25								
RZ.....1	57.88.4103		Network 8 = 10 kOhm (old part 1.010.014.57)								
RZ.....2	57.88.4103		Network 8 = 10 kOhm (old part 1.010.014.57)								
RZ.....3	57.88.4103		Network 8 = 10 kOhm (old part 1.010.014.57)								
RZ.....4	57.88.4103		Network 8 = 10 kOhm (old part 1.010.014.57)								
RZ.....5	57.88.4103		Network 8 = 10 kOhm (old part 1.010.014.57)								
RZ.....6	57.88.4103		Network 8 = 10 kOhm (old part 1.010.014.57)								
RZ.....7	57.88.4332		Network 8 = 3.3 kOhm								

ORIG 86/03/25

STUDER (00) 86/03/25 PB

MASTER PERIPHERY CONTROLLER

1.820.728.81

PAGE 1

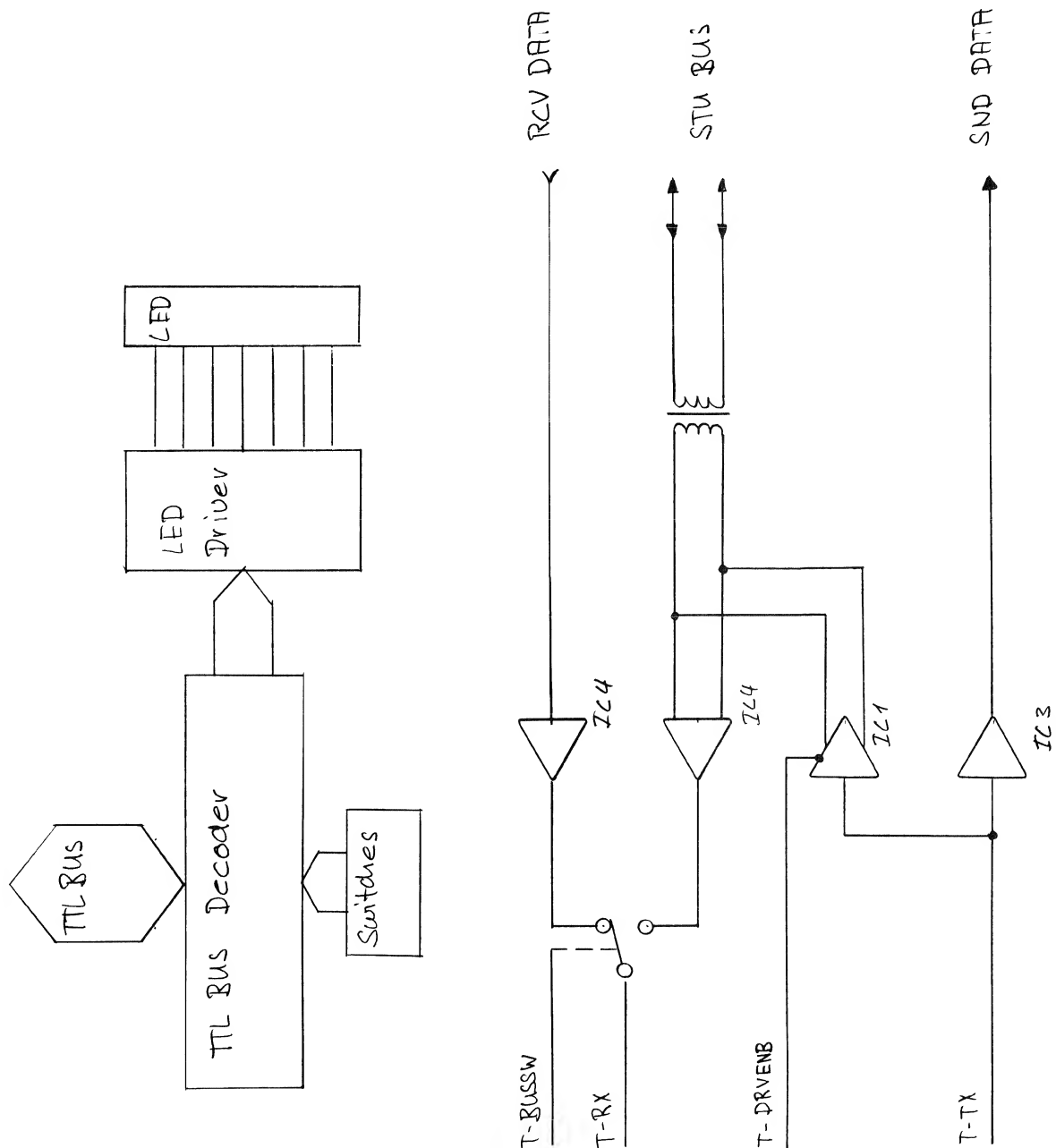
STUDER (00) 86/03/25 PB

MASTER PERIPHERY CONTROLLER

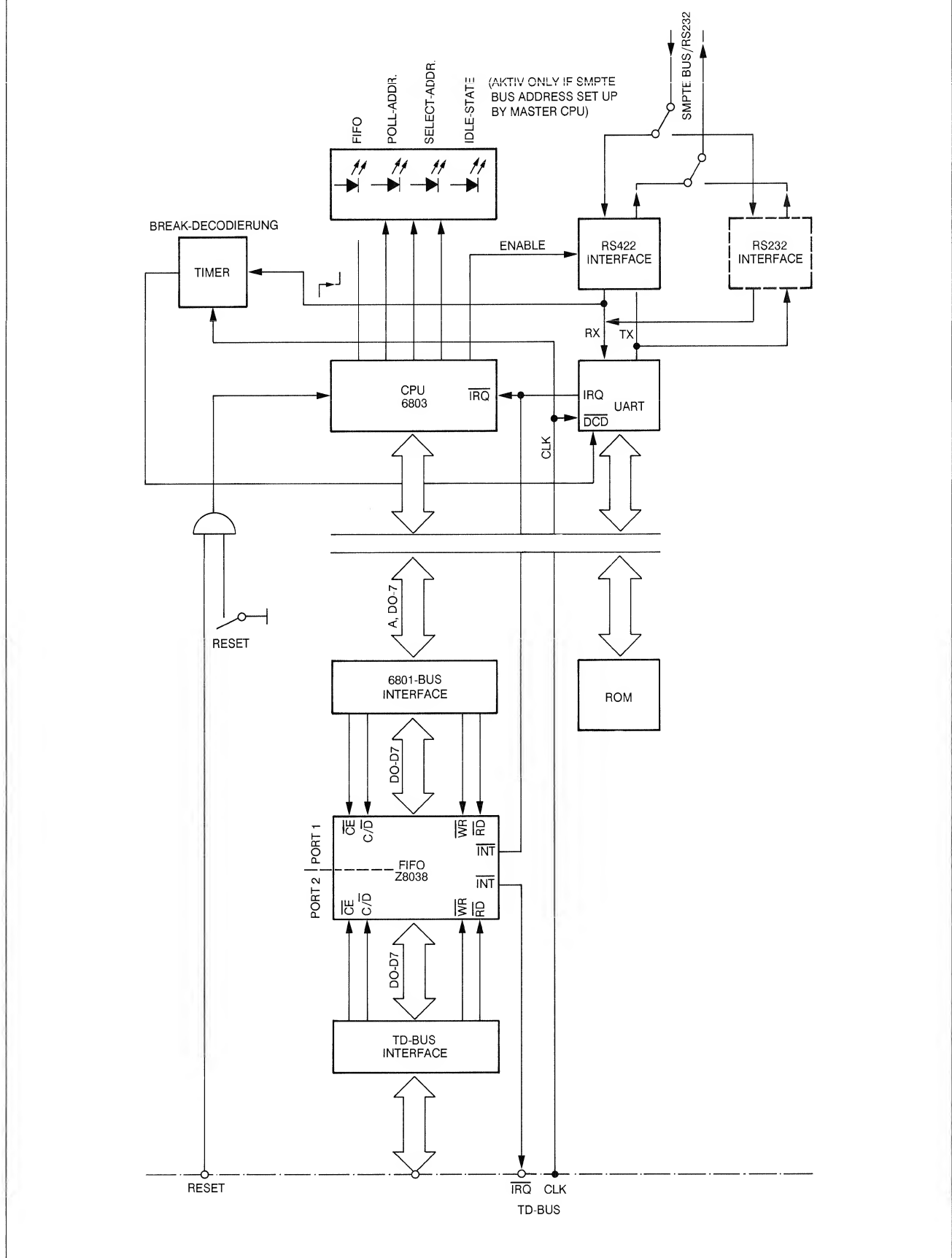
1.820.728.81

PAGE 2

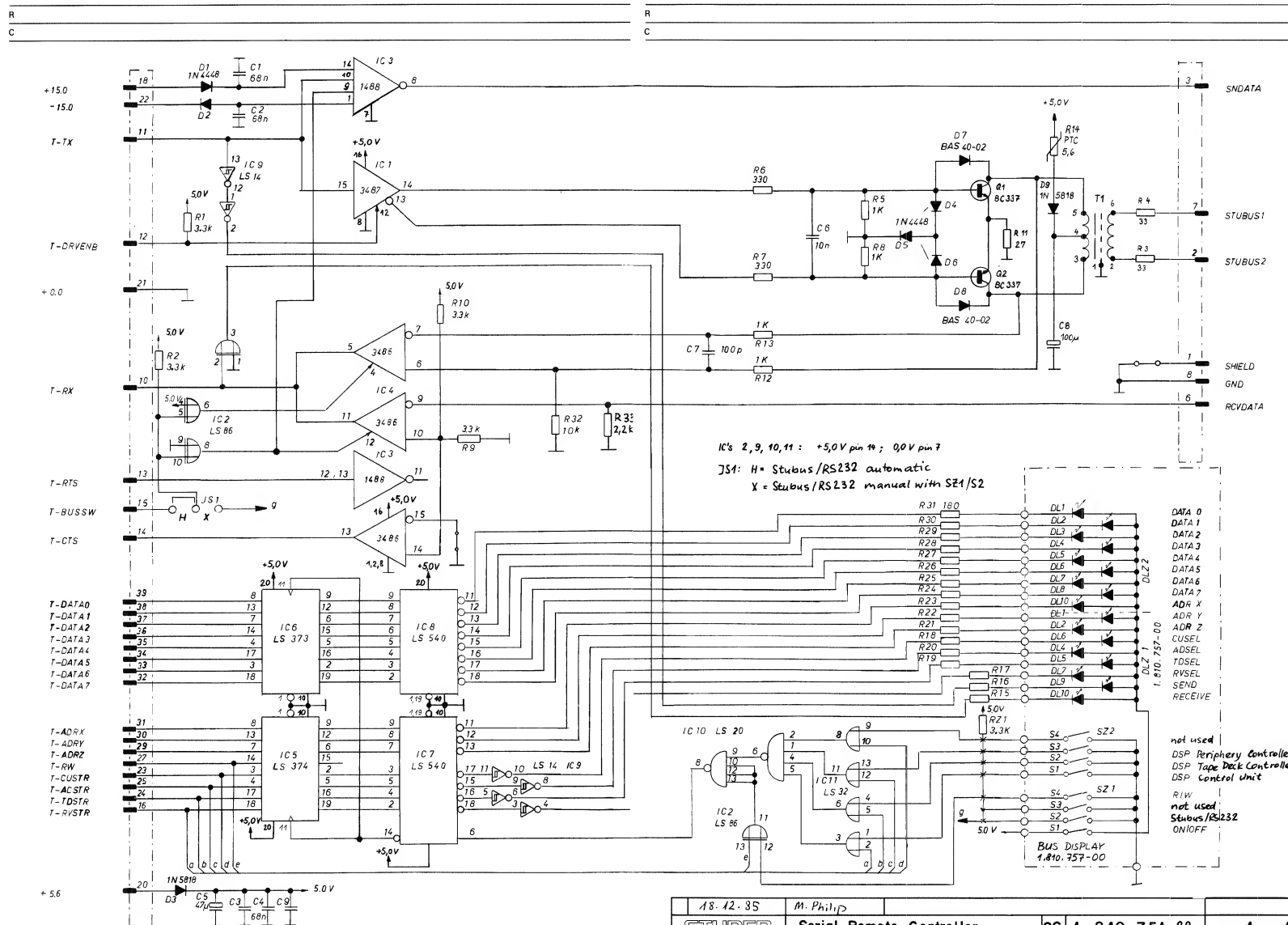
Block Diagram Serial Remote Controller 1.810.751



June 83 Ke	A810		
STUDER	SERIAL REMOTE CONTROLLER	181075100	PAGE 1 OF 5

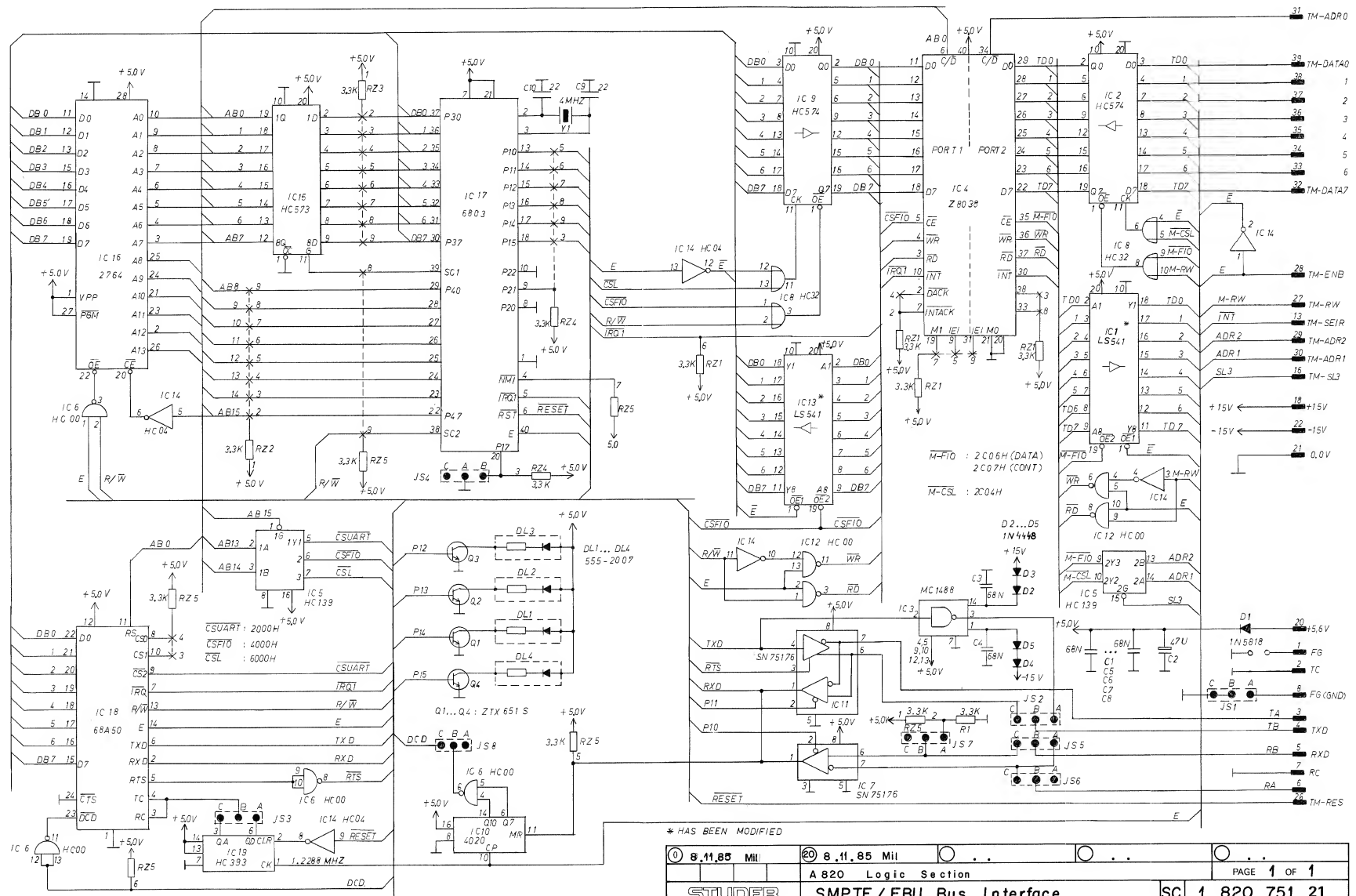


Serial Remote Controller 1.810.751-82

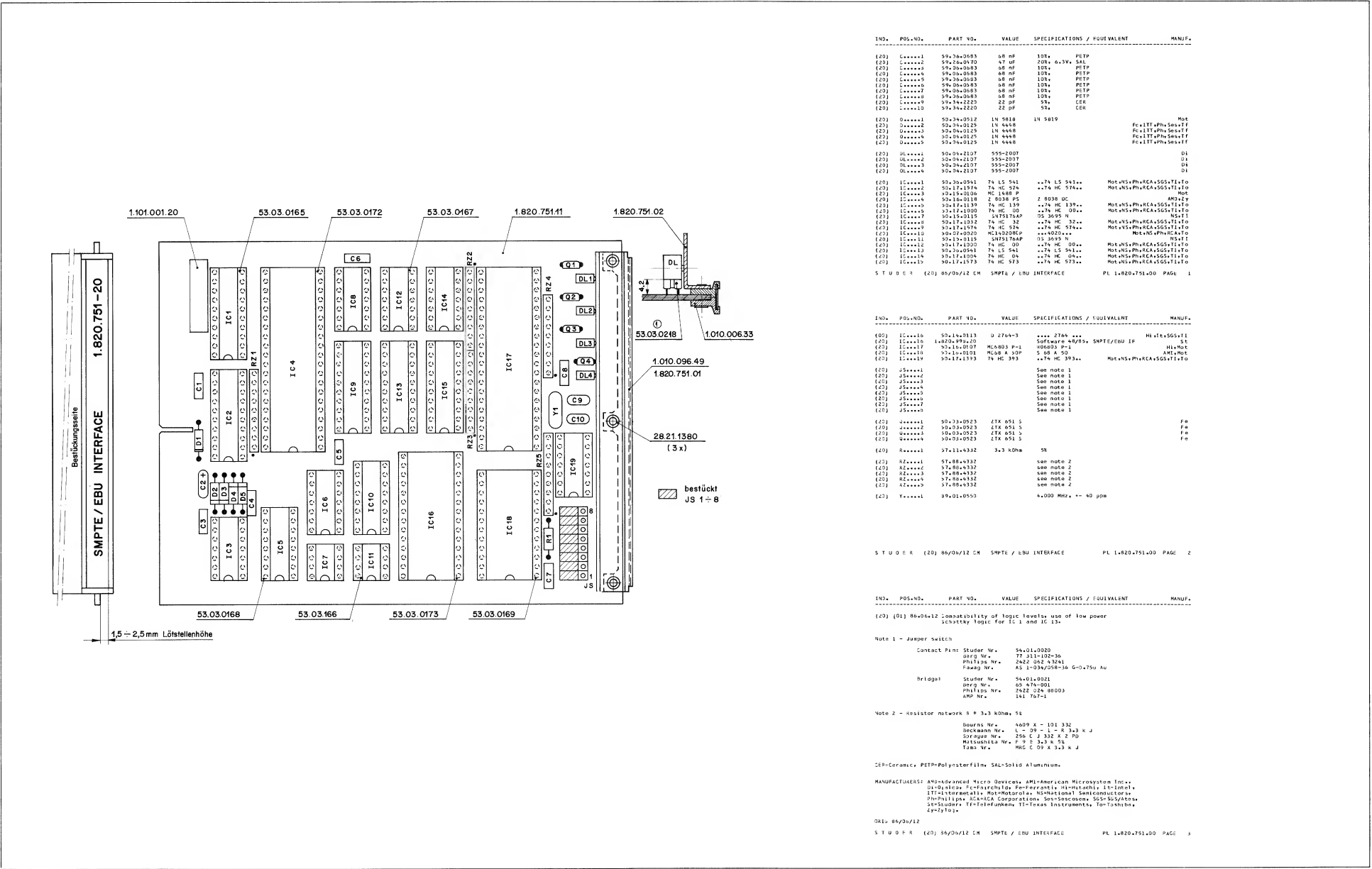




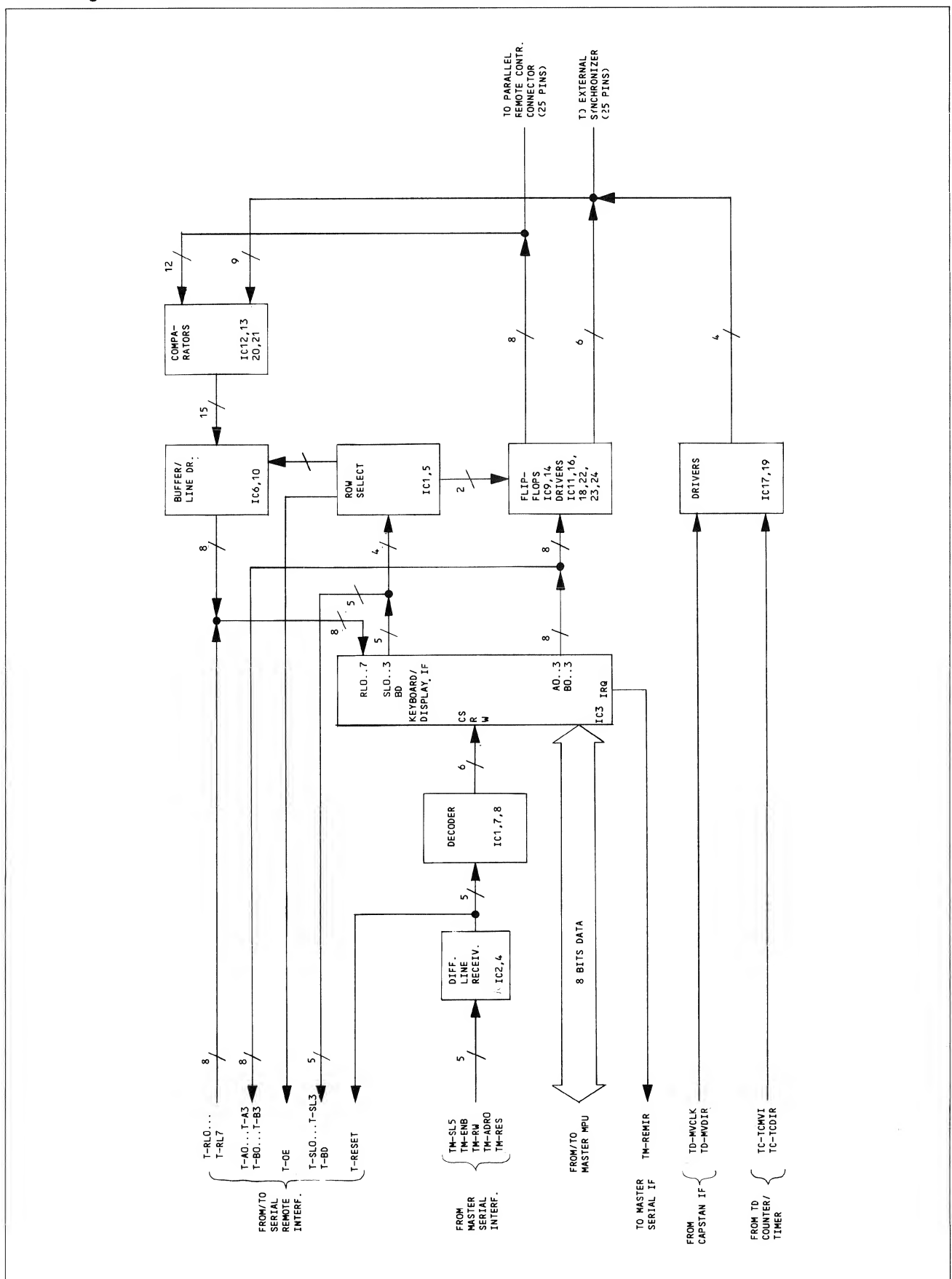
SMPTE/EBU Bus Interface 1.820.751.21



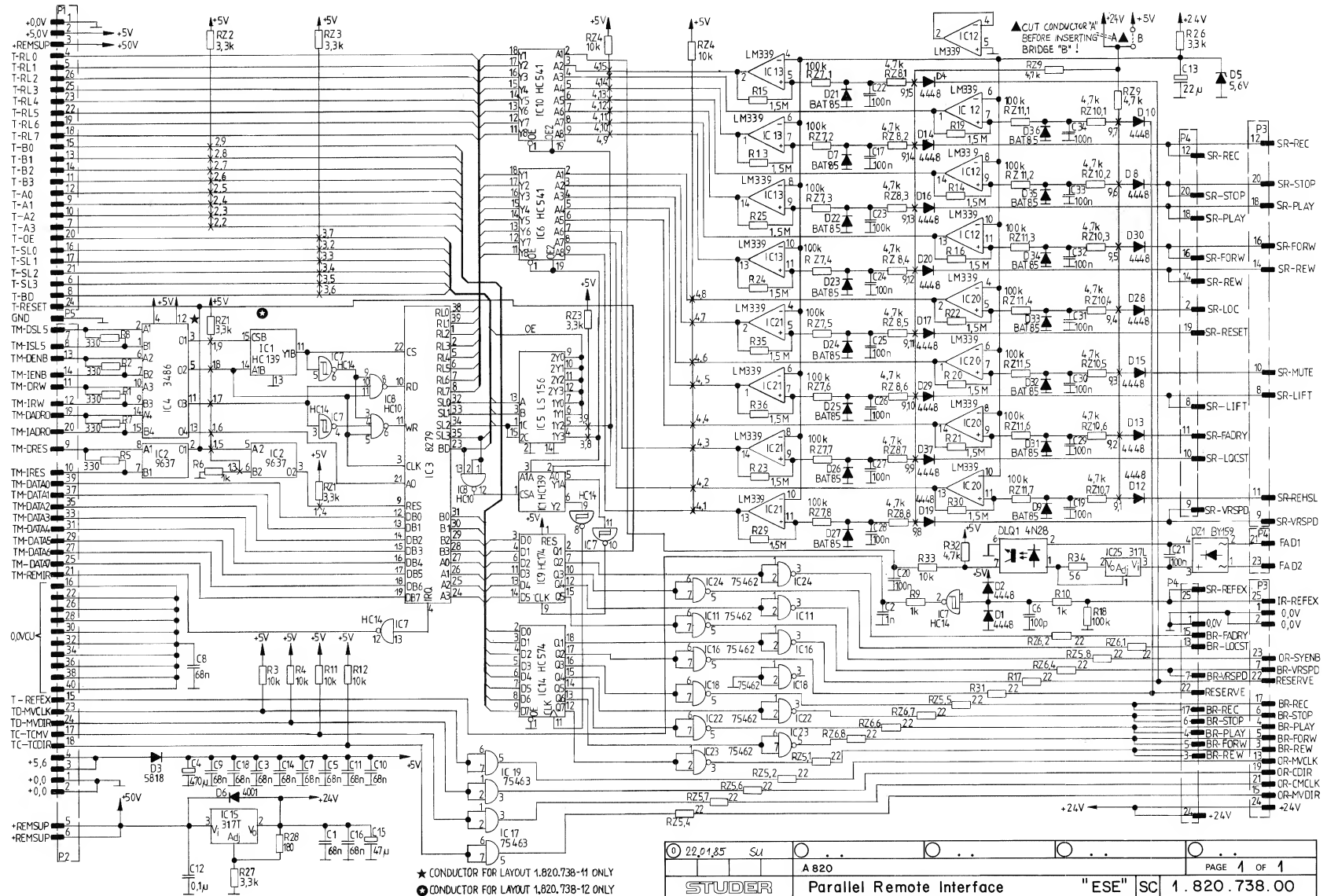
SMPT E/EBU Bus Interface 1.820.751.21



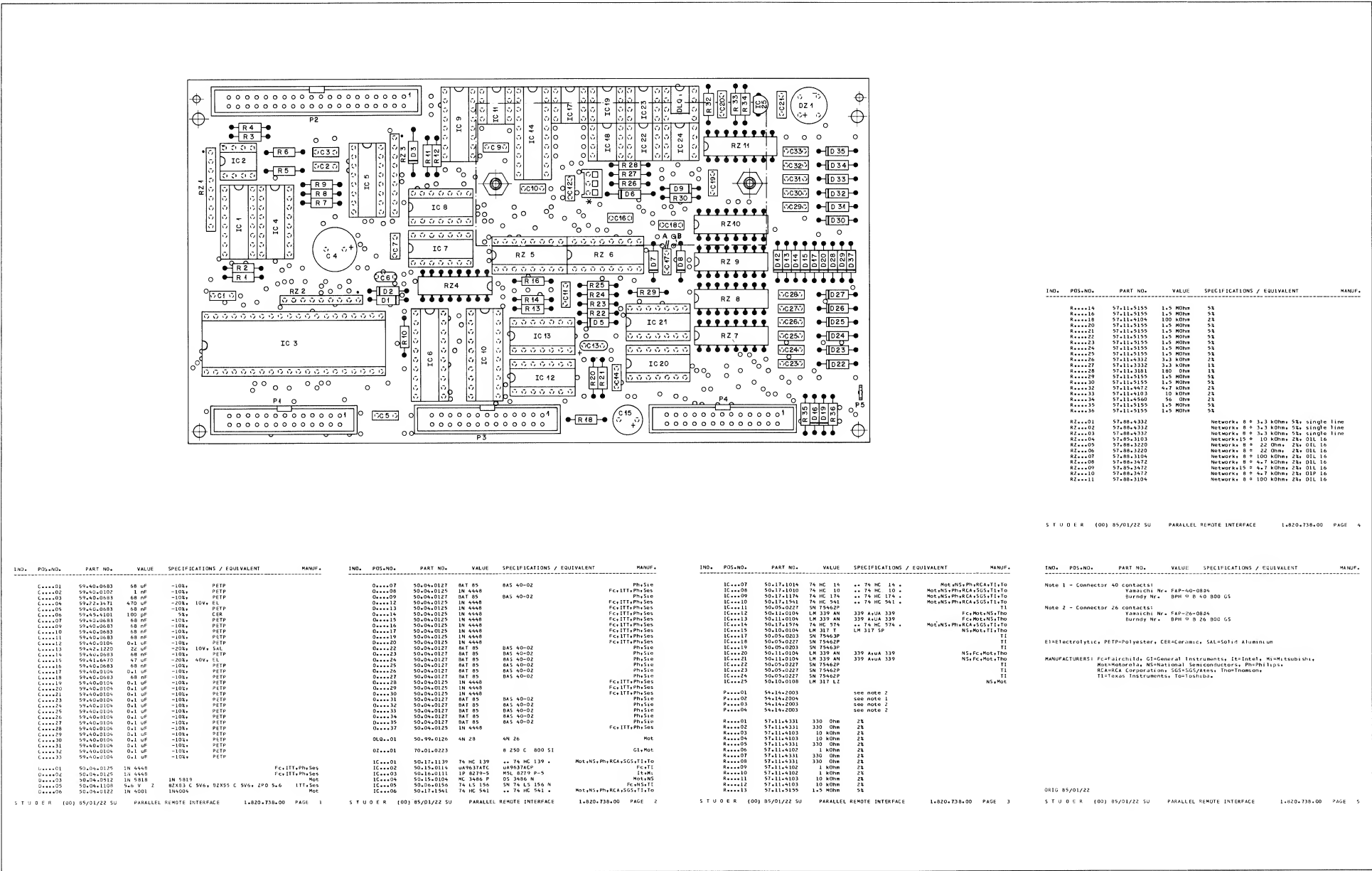
Block Diagram Parallel Remote Interface PCB "ESE" 1.820.738

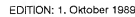


Parallel Remote Interface ESE 1.820.738.00

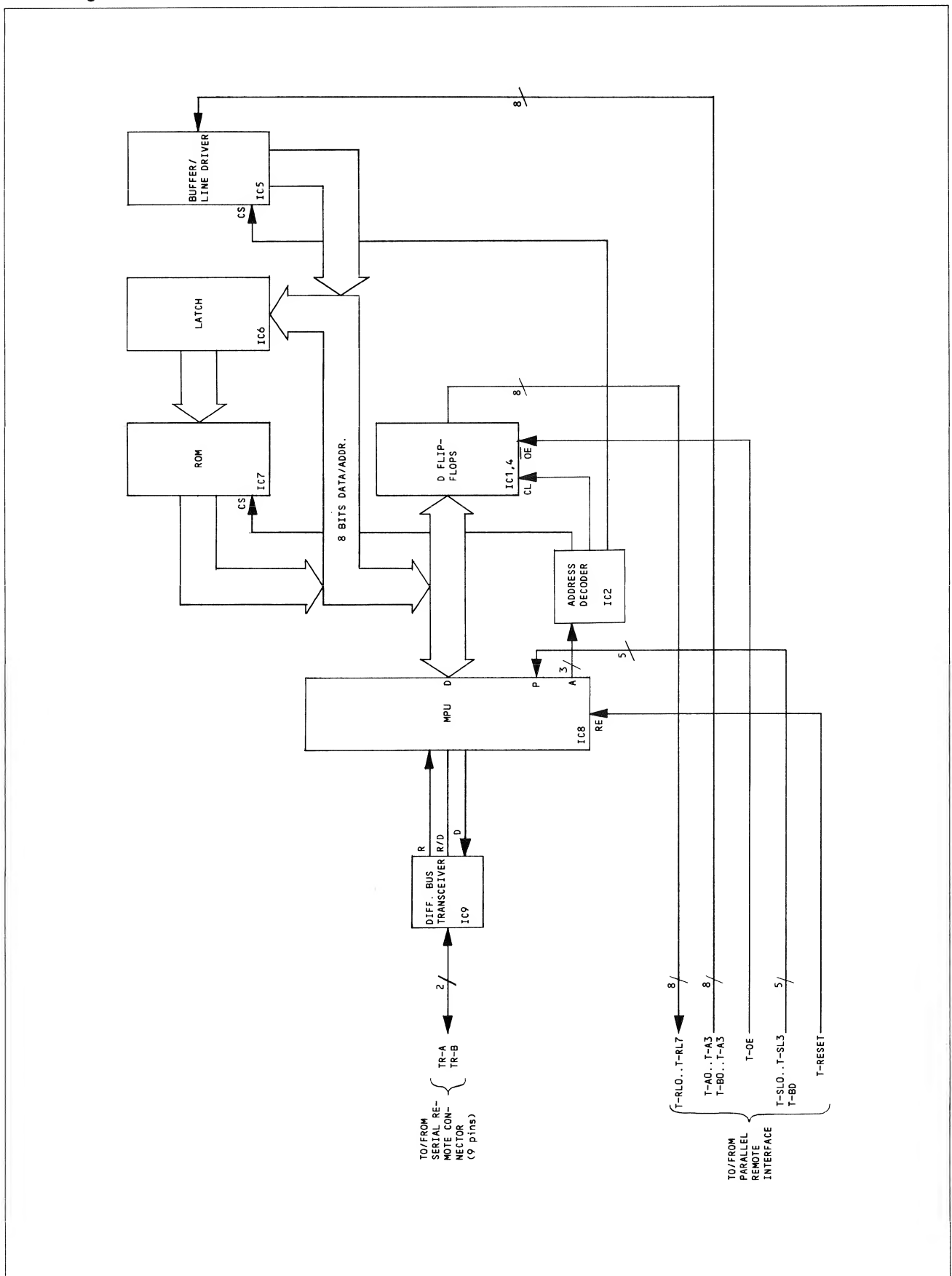


Parallel Remote Interface ESE 1.820.738.00

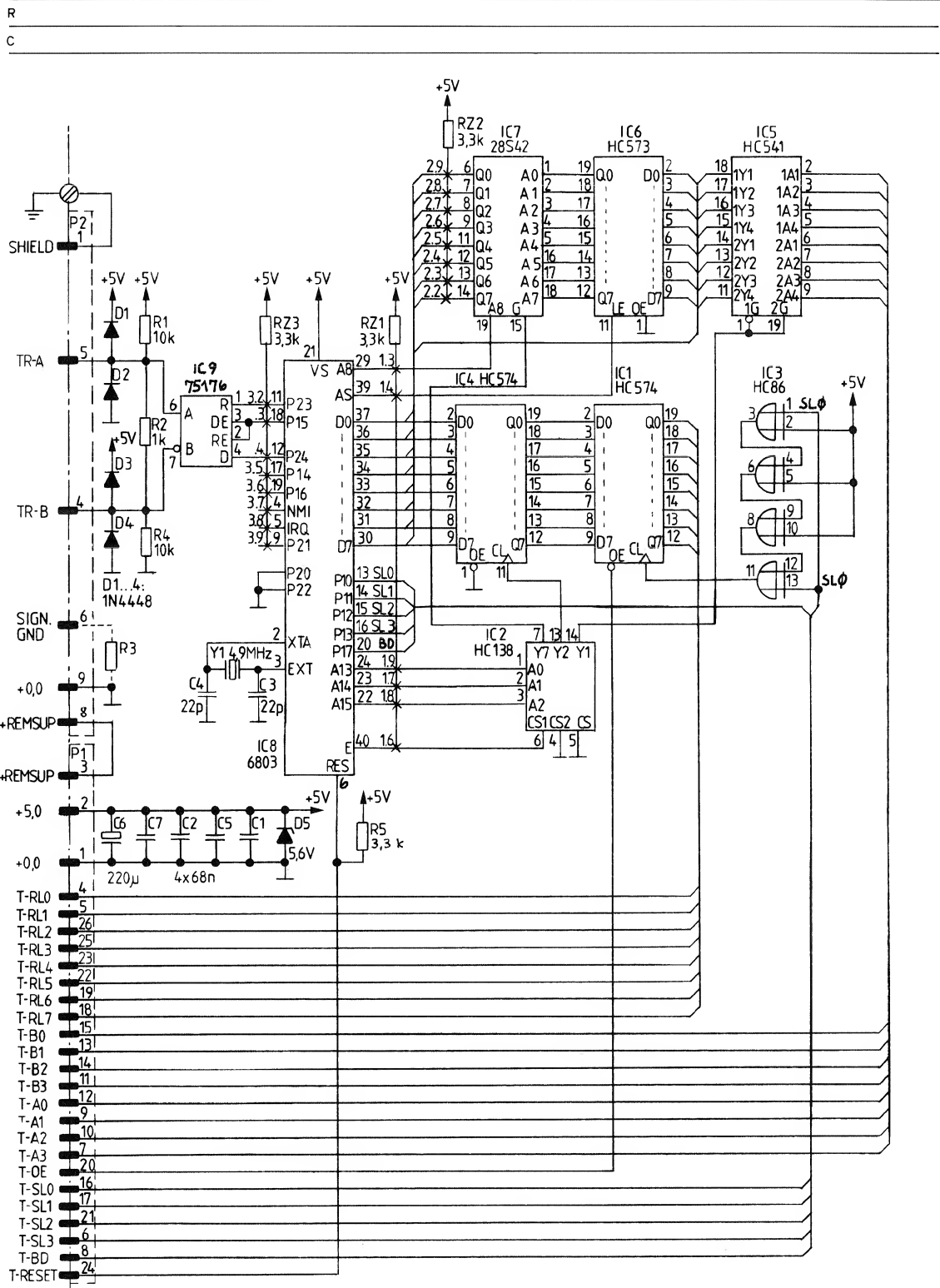




Block Diagram Serial Remote Interface PCB "ESE" (Option) 1.820.729

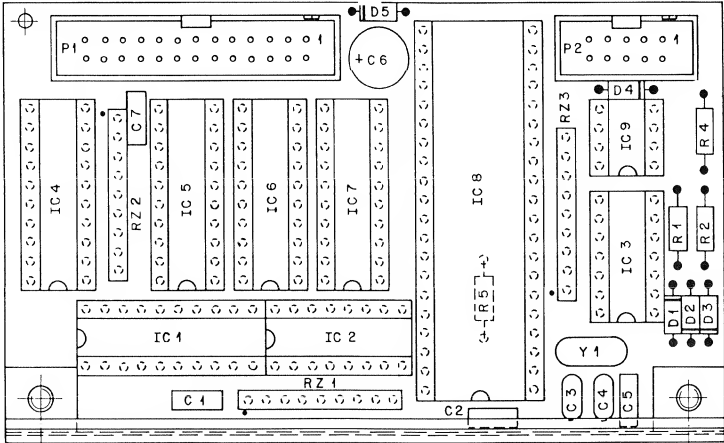


Serial Remote Interface ESE 1.820.729-00



20 21.3.85	Su	...	...	...	...
A820 Options				PAGE 1 OF 1	
STUDER		Serial Remote Interface		ESE SC	1.820.729-00

Serial Remote Interface ESE 1.820.729-00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	C.....1	59.40.0683	68nF	10%, PETP	
(20)	C.....2	59.40.0683	68nF	10%, PETP	
(20)	C.....3	59.45.2220	22pF	5%, CER	
(20)	C.....4	59.45.2220	22pF	5%, CER	
(20)	C.....5	59.40.0683	68nF	10%, PETP	
(20)	C.....6	59.22.3221	220uF	20%, 10V, EL	
(20)	C.....7	59.40.0683	68nF	10%, PETP	
(20)	D.....1	50.04.0125	1N4448		Fc, ITT, Ses, Ph
(20)	D.....2	50.04.0125	1N4448		Fc, ITT, Ses, Ph
(20)	D.....3	50.04.0125	1N4448		Fc, ITT, Ses, Ph
(20)	D.....4	50.04.0125	1N4448		Fc, ITT, Ses, Ph
(20)	D.....5	50.04.1108	5.6V Z	BZX83 C 5V6, BZX55 C 5V6, ZPD5.6	ITT, Ses
(20)	IC.....1	50.17.1574	74HC 574	... 74 HC 574	Ph, Mot, NS, RCA, To, TI
(20)	IC.....2	50.17.1139	74HC 138	... 74 HC 138	Mot, NS, Ph, RCA, SGS, TI
(20)	IC.....3	50.17.1086	74HC 86	... 74 HC 86	Mot, NS, Ph, RCA, SGS, TI
(20)	IC.....4	50.17.1574	74HC 574	... 74 HC 574	Ph, Mot, NS, RCA, To, TI
(20)	IC.....5	50.17.1541	74HC 541	... 74 HC 541	Ph, Mot, NS, RCA, To, TI
(20)	IC.....6	50.17.1573	74HC 573	... 74 HC 573	Ph, Mot, RCA, To, TI, SGS
(20)	IC.....7	50.14.0120	TBP28542N		TI
(20)	IC.....7	1.820.999+20		Software 13/85	St
(20)	IC.....8	50.16.0107	MC6803 P-1	HD 6803P-1	Mot, TI
(20)	IC.....9	50.15.0115	SN75176 AP	DS 3695 N	TI, NS
(20)	P.....1	54.14.2003		see note 1	
(20)	P.....2	54.14.2001		see note 2	
(20)	R.....1	57.11.4103	10 kOhm	2%	
(20)	R.....2	57.11.4102	1 kOhm	2%	
(20)	R.....4	57.11.4103	10 kOhm	2%	
(20)	R.....5	57.11.4332	3.3kOhm	2%	
(20)	RZ.....1	57.88.4332	893.3kOhm	Network, 8 ÷ 3.3 kOhm, 5% single line	
(20)	RZ.....2	57.88.4332	893.3kOhm	Network, 8 ÷ 3.3 kOhm, 5% single line	
(20)	RZ.....3	57.88.4332	893.3kOhm	Network, 8 ÷ 3.3 kOhm, 5% single line	

S T U O E R (20) 85/03/21 SU SERIAL REMOTE INTERFACE 1.820.729.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	Y.....1	89.01.0553		4.9152 MHz, TO 18	

Note 1 - Connector 26 contacts:
Yamaichi Nr. FAP-26-08#4
Burndy Nr. BPH 9 B 26 B00 GS

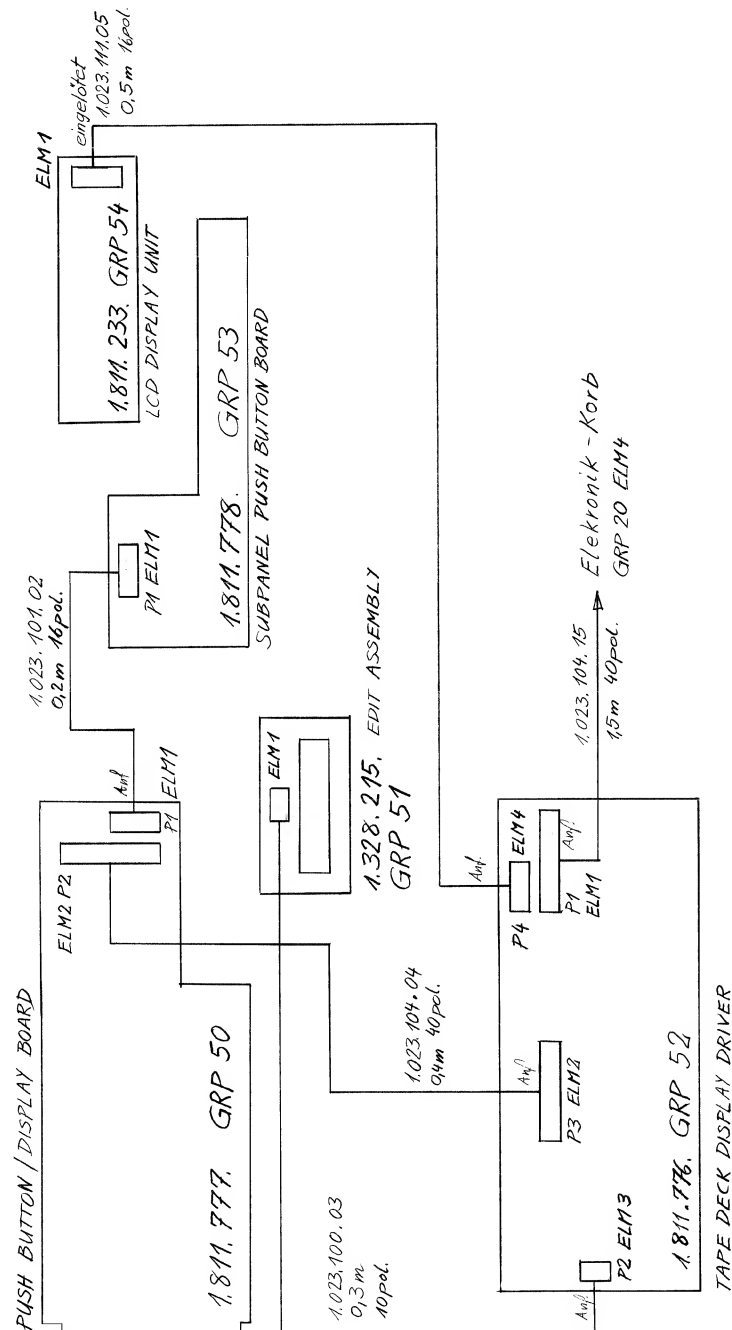
Note 2 - Connector 10 contacts:
Yamaichi Nr. FAP-10-08#4
Burndy Nr. BPH 9 B 10 B00 GS

El=Electrolytic, PETP=Polyester, CER=Ceramic, SAL=Solid Aluminium

MANUFACTURERS: Fe=Ferranti, Hi=Hitachi, Is=Intersil, Mot=Motorola,
NS=National Semiconductors, Ph=Philips,
RCA=RCA Corporation, SGS=SGS/Ates, St=Studer
TI=Texas Instruments, To=Toshiba

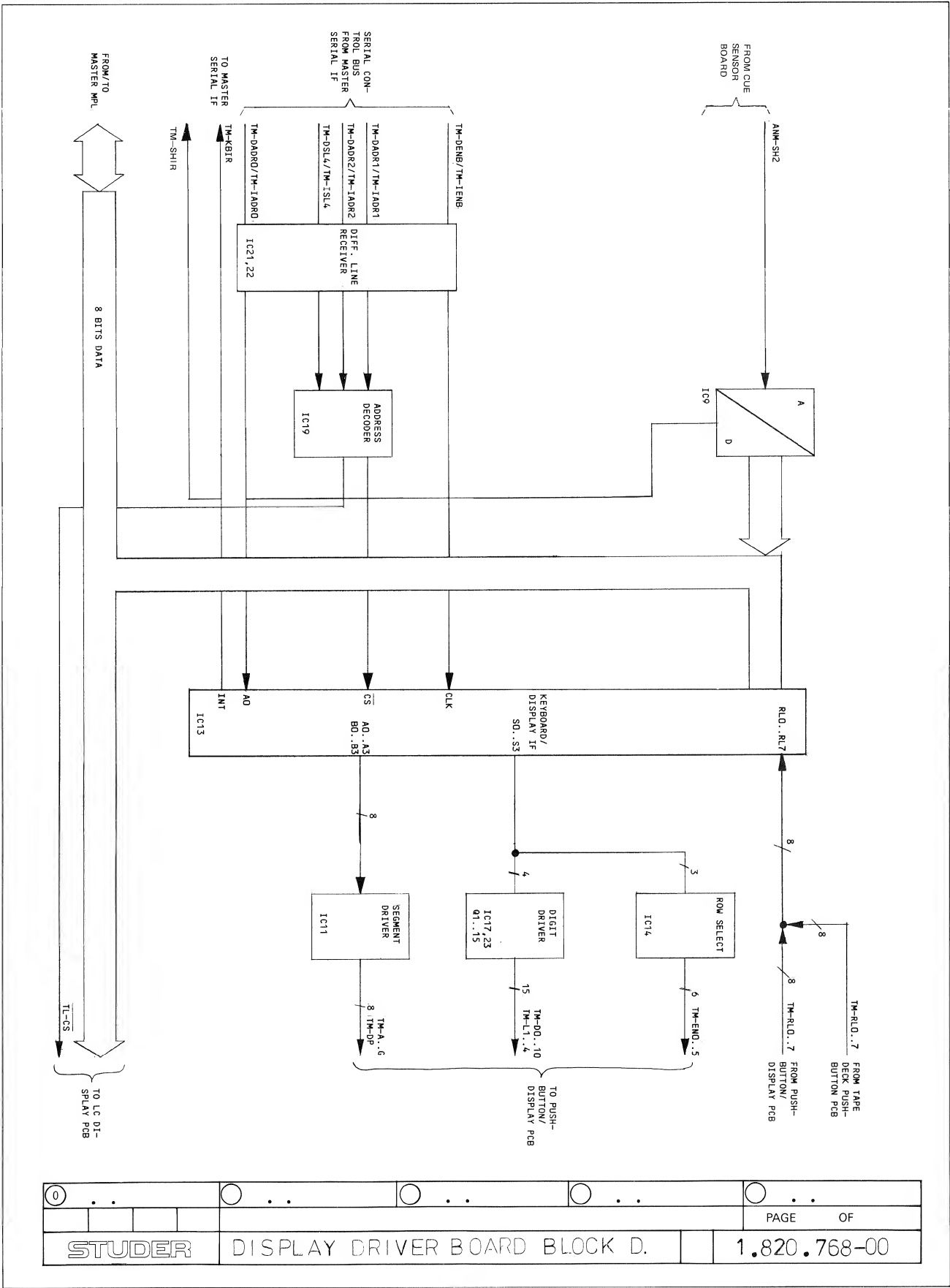
ORIG 85/03/21 (20) 85/03/21
S T U O E R (20) 05/03/21 SU SERIAL REMOTE INTERFACE 1.820.729.00 PAGE 2

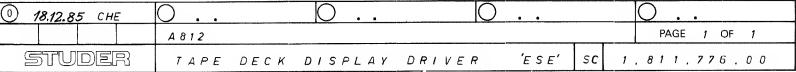
Block Diagram Uebersicht GRP50-54



4.10.85 Gd			
STUDER	A812, Übersicht GRP 50 - 54		PAGE 1 OF 1

Block Diagram Display Driver Board



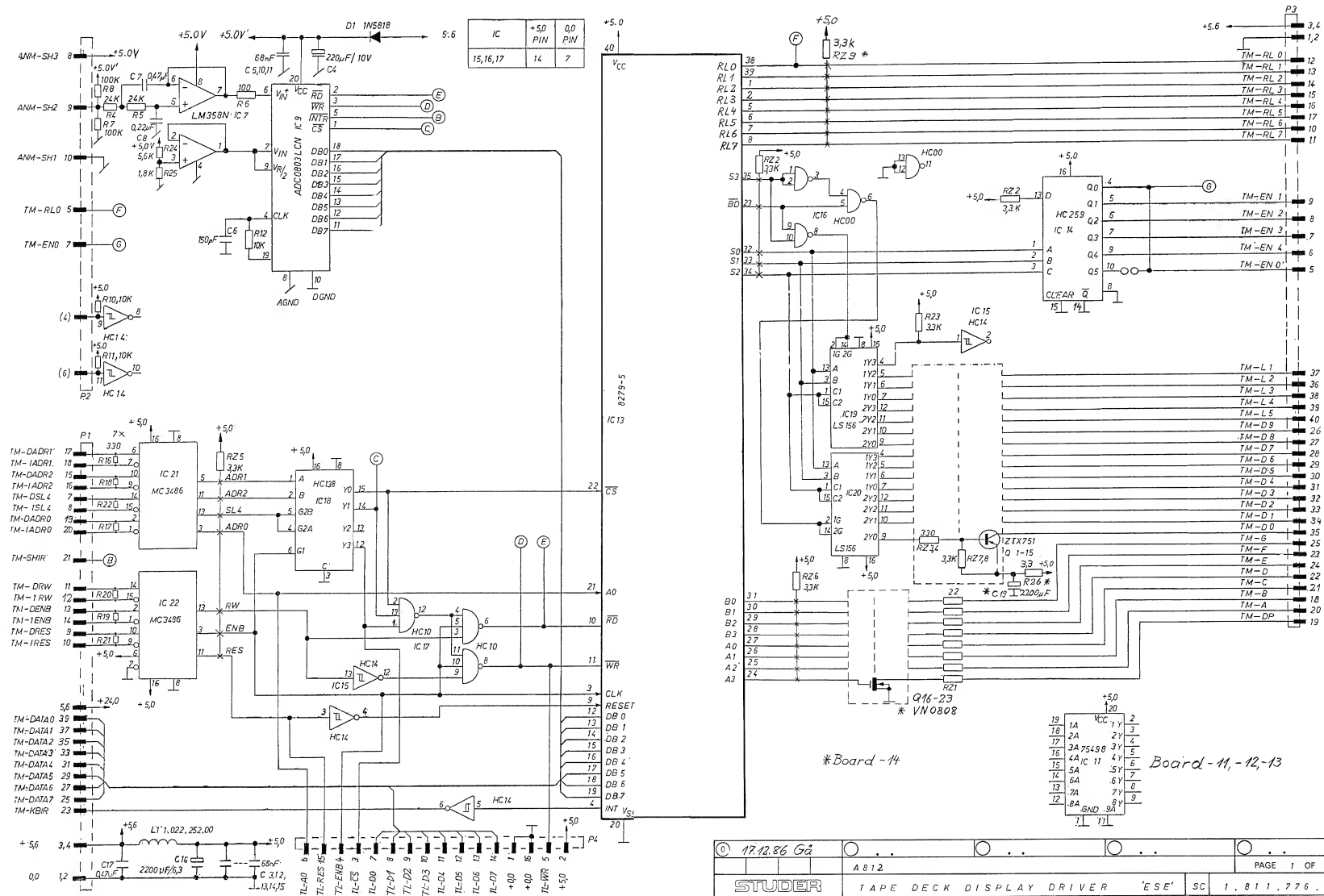




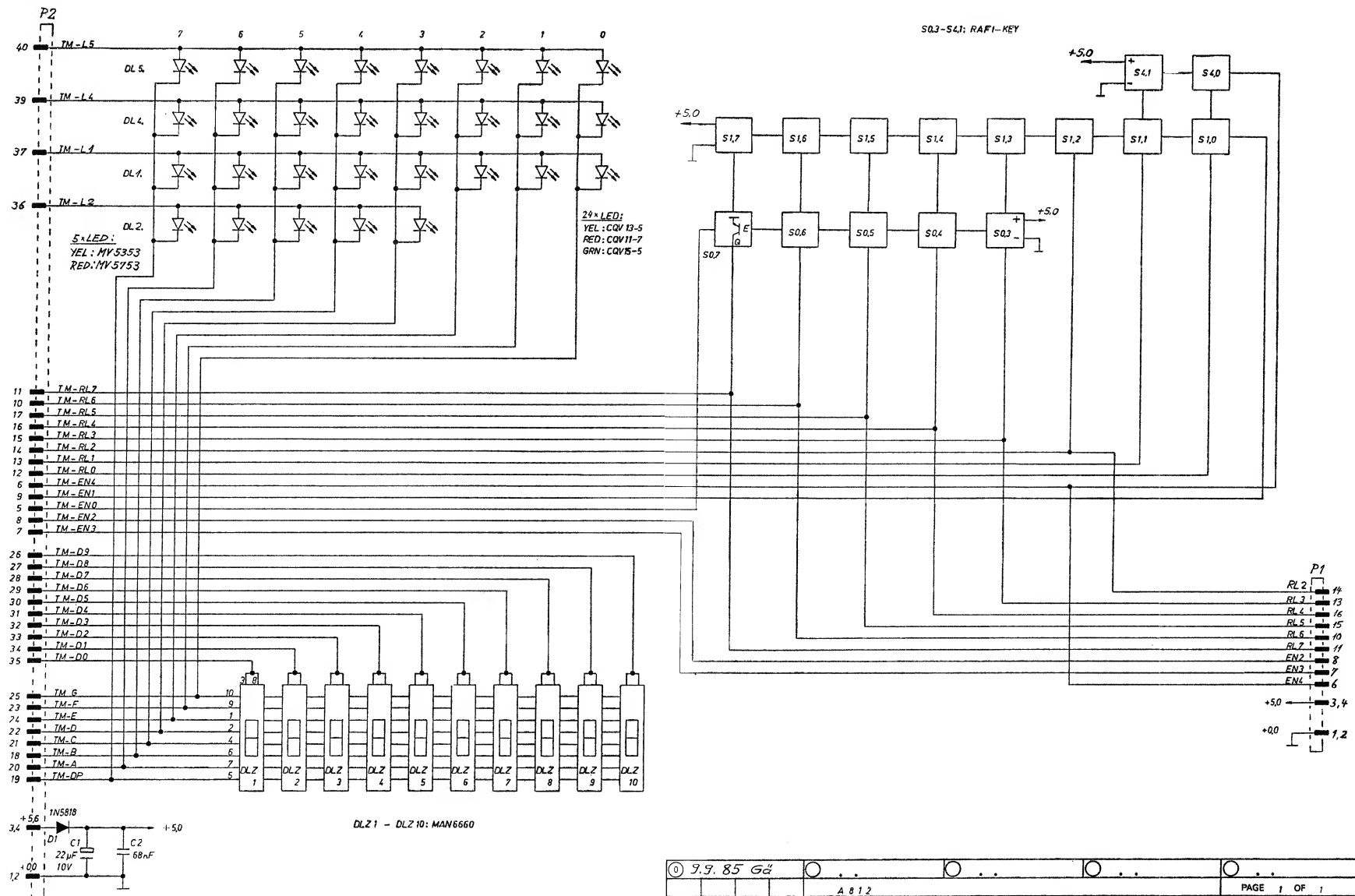
IVD.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
K7...3	77.88.4331		Network	8 0 330 Ohm; 2%; 01L 16	
K7...4	77.88.4321		Network	8 0 330 Ohm; 2%; 01L 16	
K7...9	77.88.4332		Network	8 3 3 kOhm; 5%; single line	
K7...6	77.88.4332		Network	8 0 330 Ohm; 5%; single line	
K7...7	77.88.4332		Network	8 3 3 kOhm; 5%; single line	
K7...8	77.88.4332		Network	8 3 3 kOhm; 5%; single line	

EDITION: 1. Oktober 1989

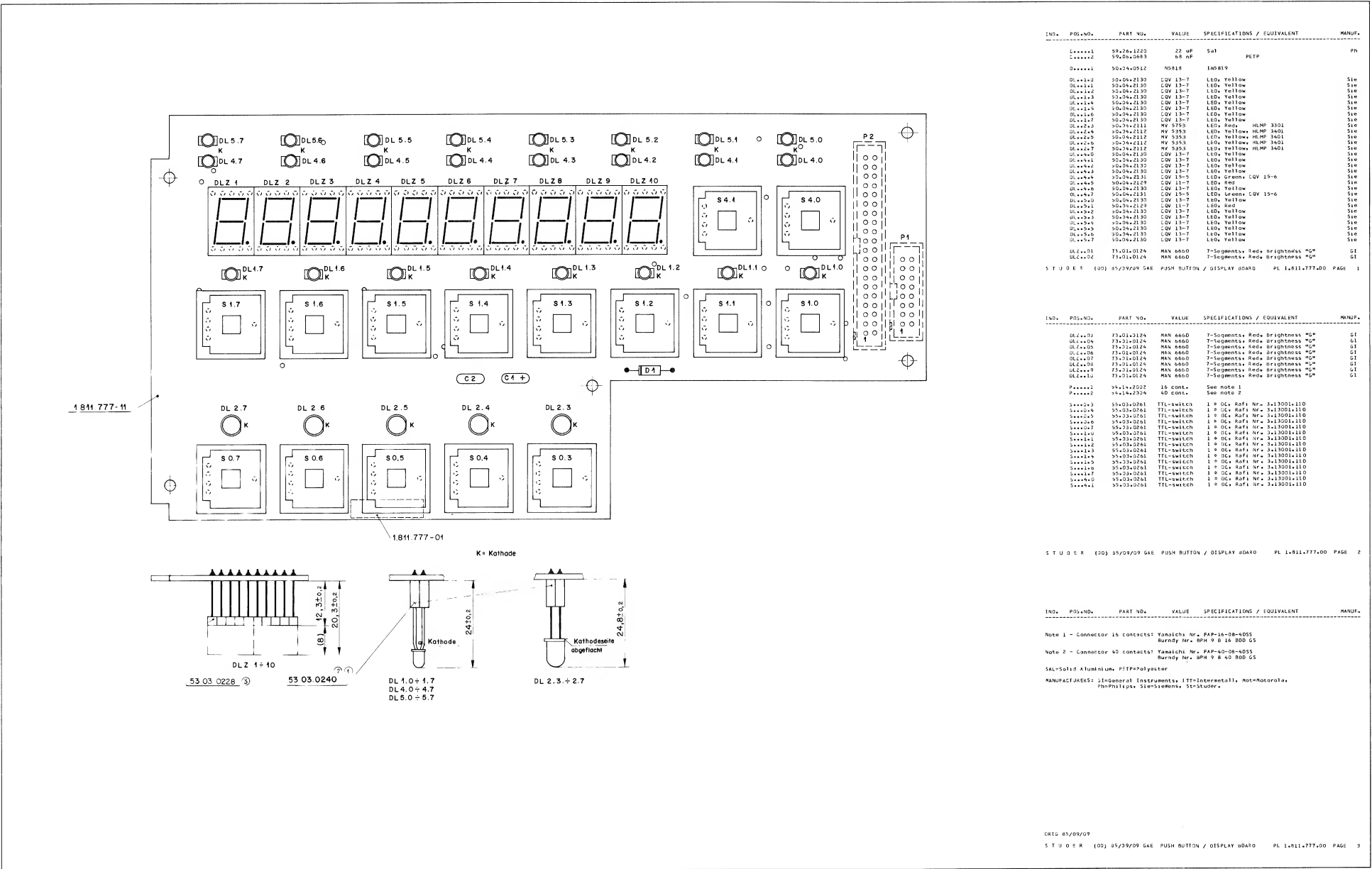
Tape Deck Display Driver ESE 1.811.776.82



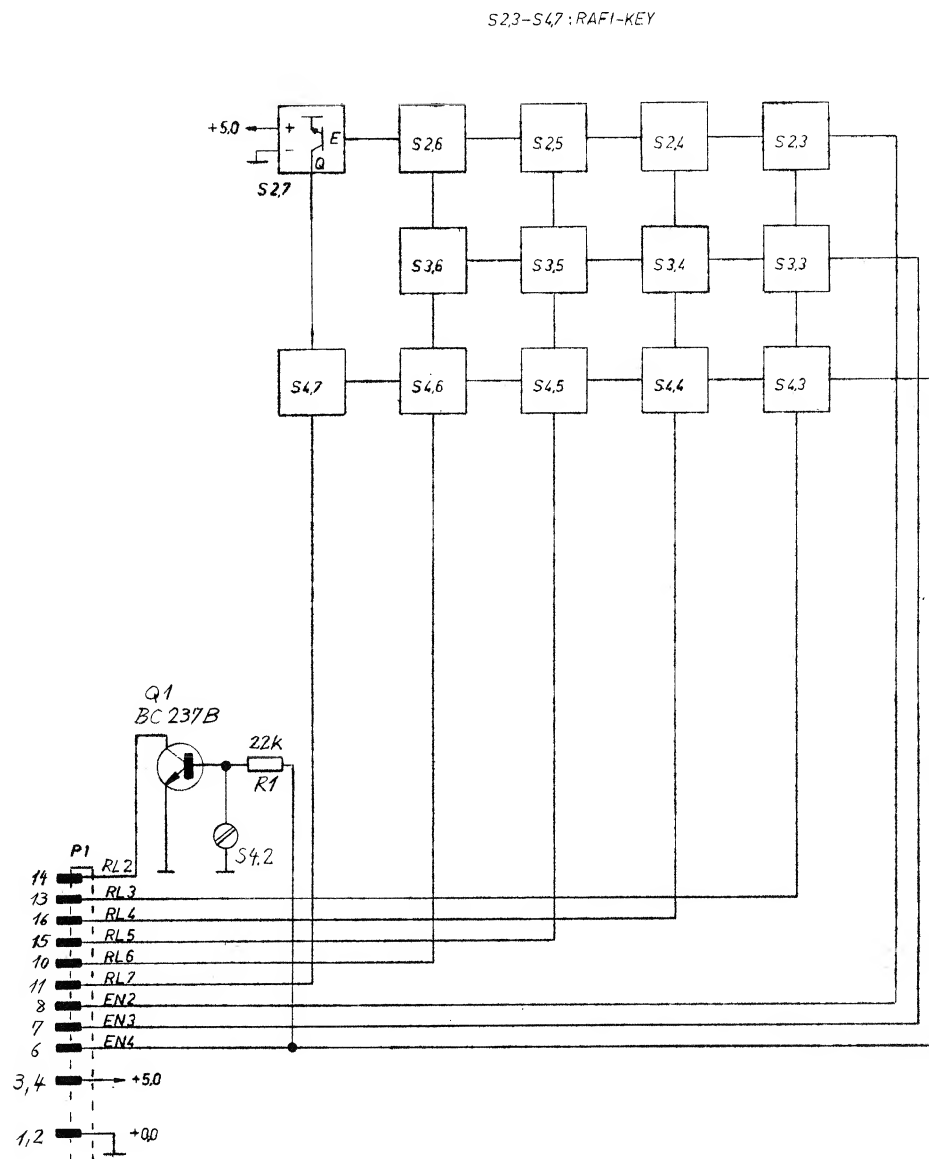
Push Button / Display Board 1.811.777-00



Push Button / Display Board 1.811.777-00

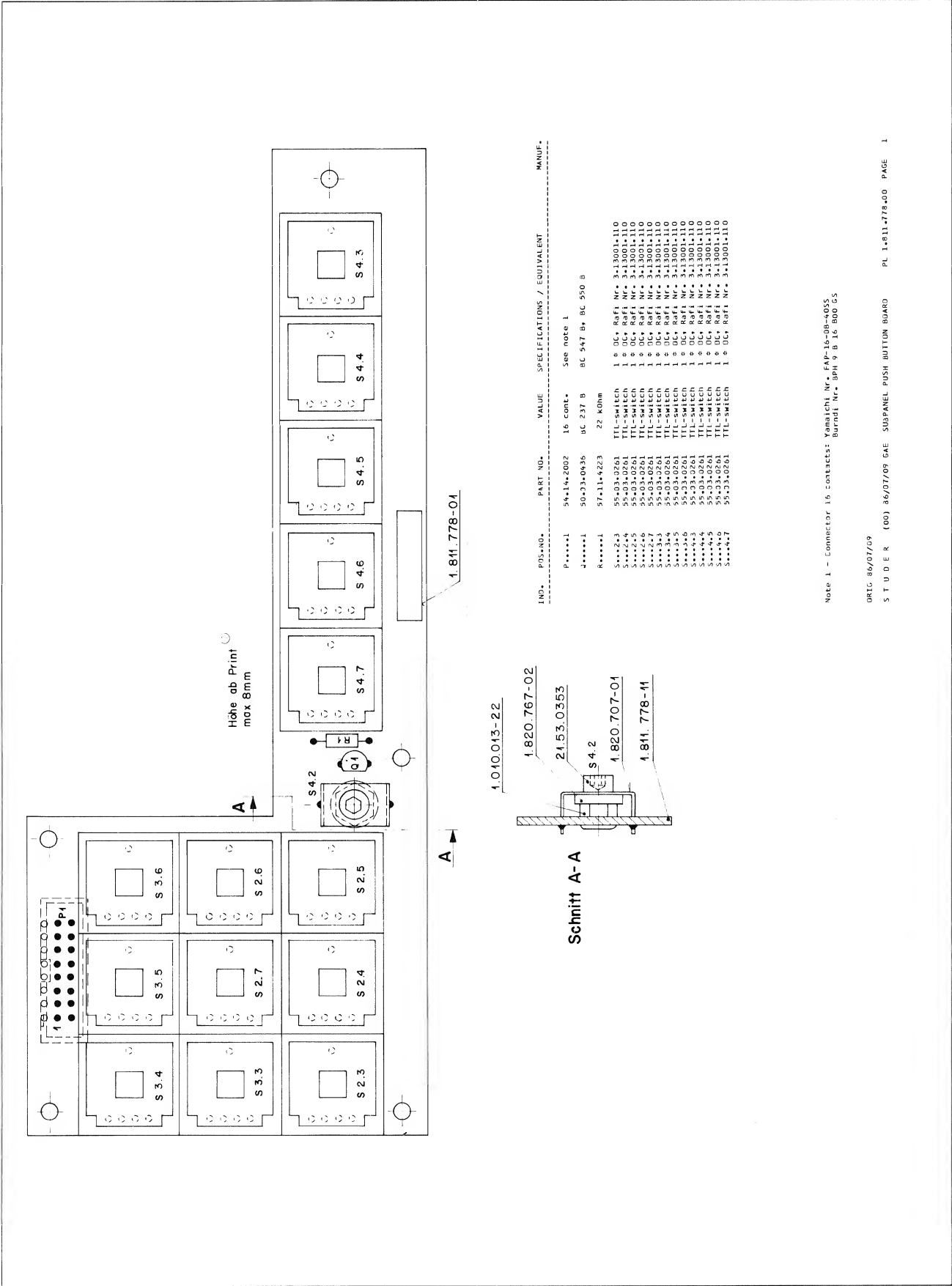


Subpanel Push Button Board 1.811.778-00

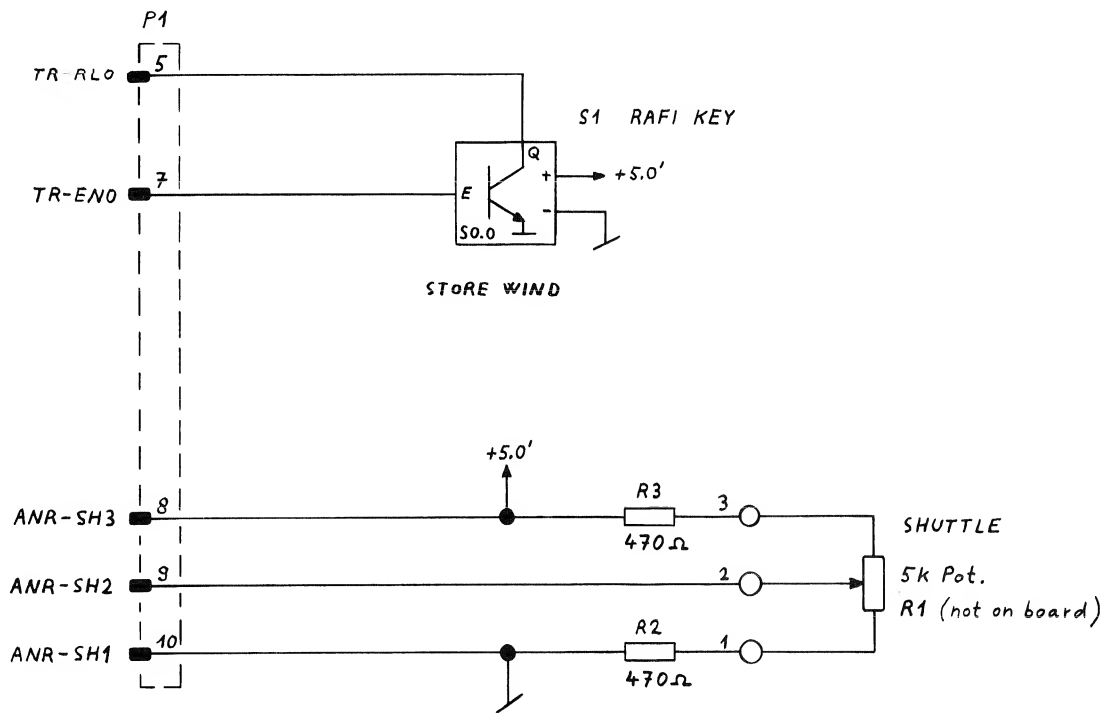


① 9.7.85 G6	...	...	...	...
	A 8 1 2		PAGE 1 OF 1	
STUDER	SUB PANEL PUSH BUTTON BOARD	SC	1.811.778-00	

Subpanel Push Button Board 1.811.778-00

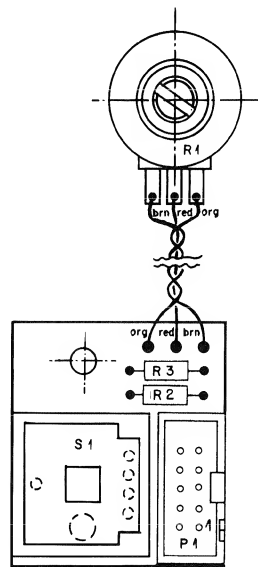


Shuttle Board 1.328.214.00



© 22.03.85 CHE	A820/A812		
STUDER	SHUTTLE BOARD	SC 1.328.214.00	PAGE 1 OF 1

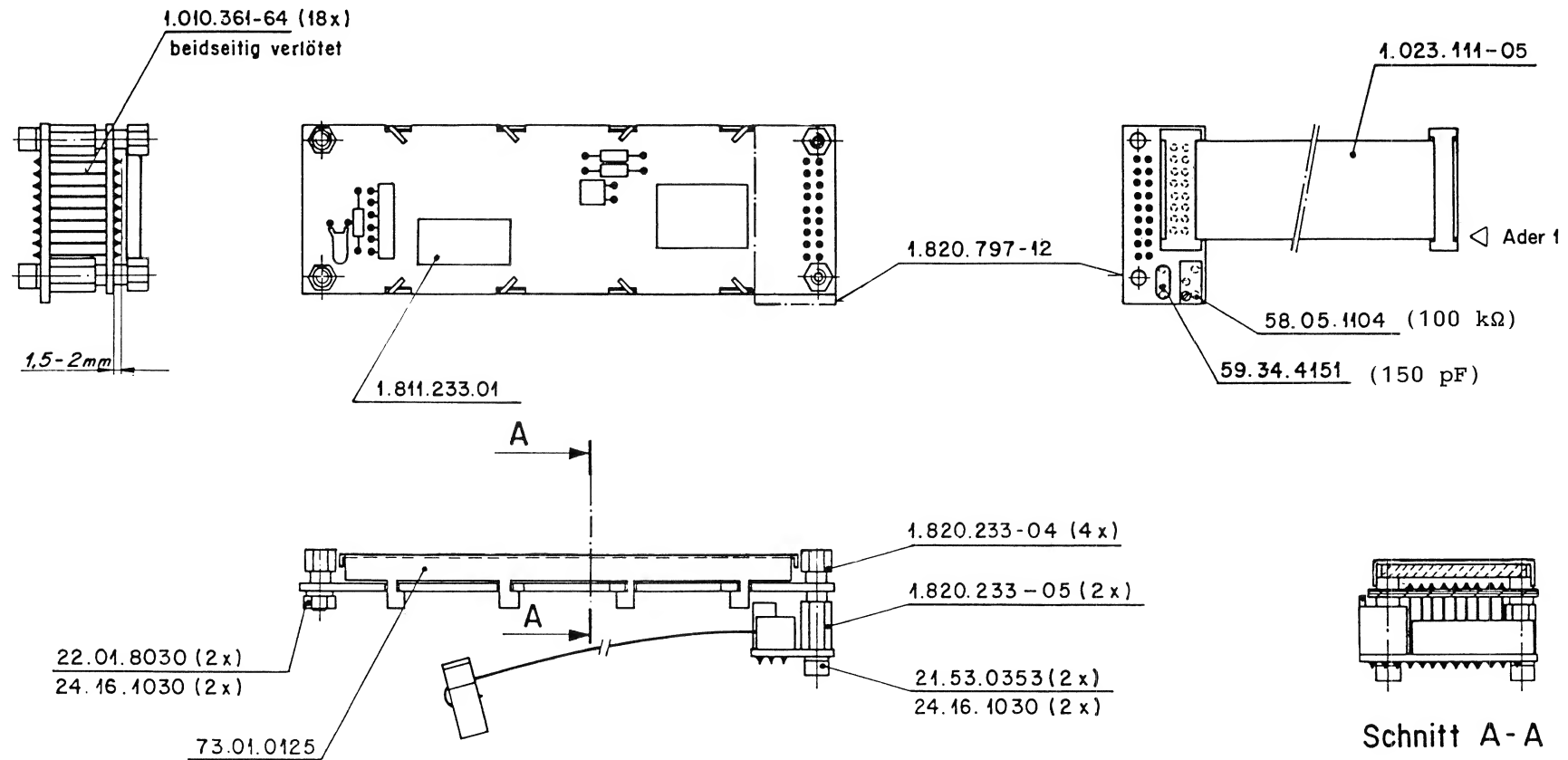
Shuttle Board 1.328.214.00

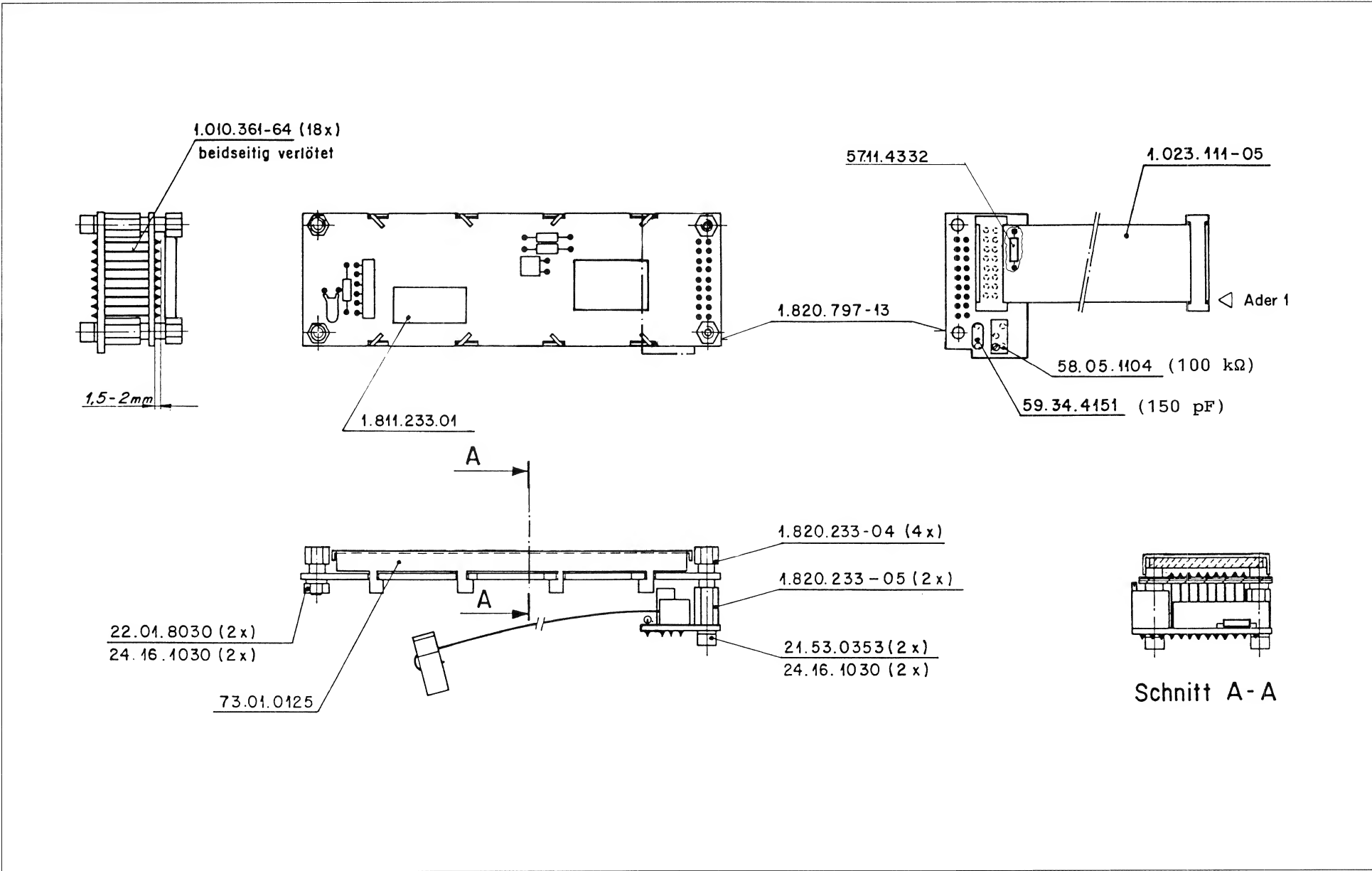


IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
P....01		54.14.2001		see note 1	
R....02		57.11.4471	470 Ohm	2%	
R....03		57.11.4471	470 Ohm	2%	
S....01		55.03.0261	TTL-switch	1 x 0C, Rafi Nr.3.13001.110	

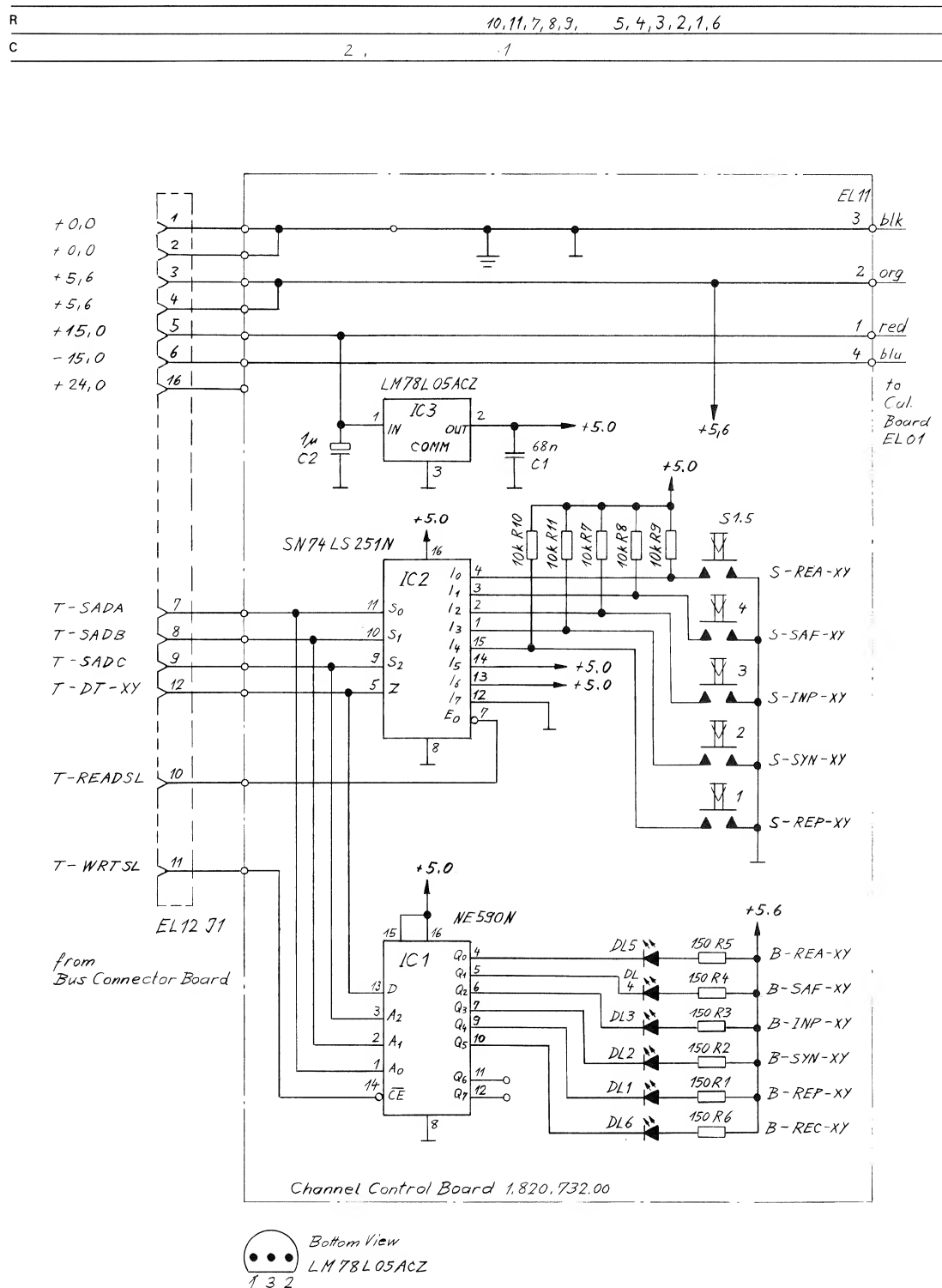
Note 1 - Connector 10 contacts: Yamaichi Nr. FAP-10-08#4
Burndy Nr. BPH 9 8 10 B00 GS

LC Display Einheit 1.811.233.81



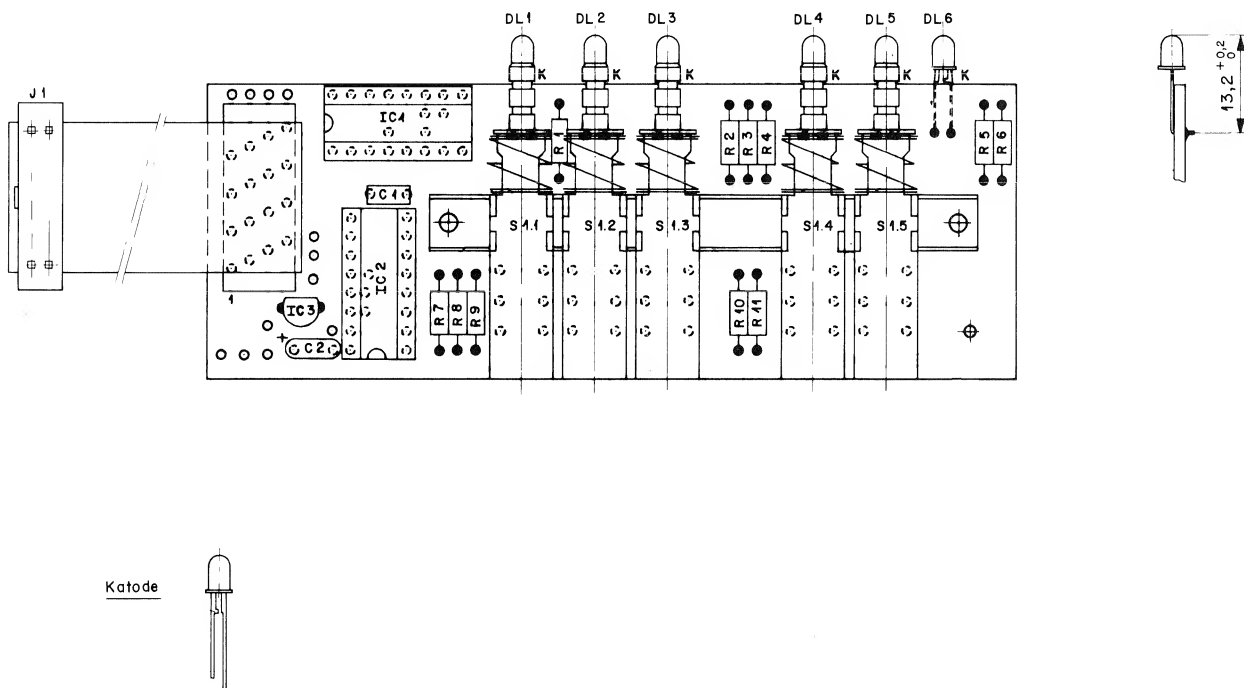


Channel Control Board 1.820.732-00



06.08.82	gimpark L5	A 820 / A810	Audio Section	Part of GRP 70
STUDER	Channel Control Board	SC	1. 820. 732 - 00	PAGE 1 OF 1

Channel Control Board 1.820.732-00



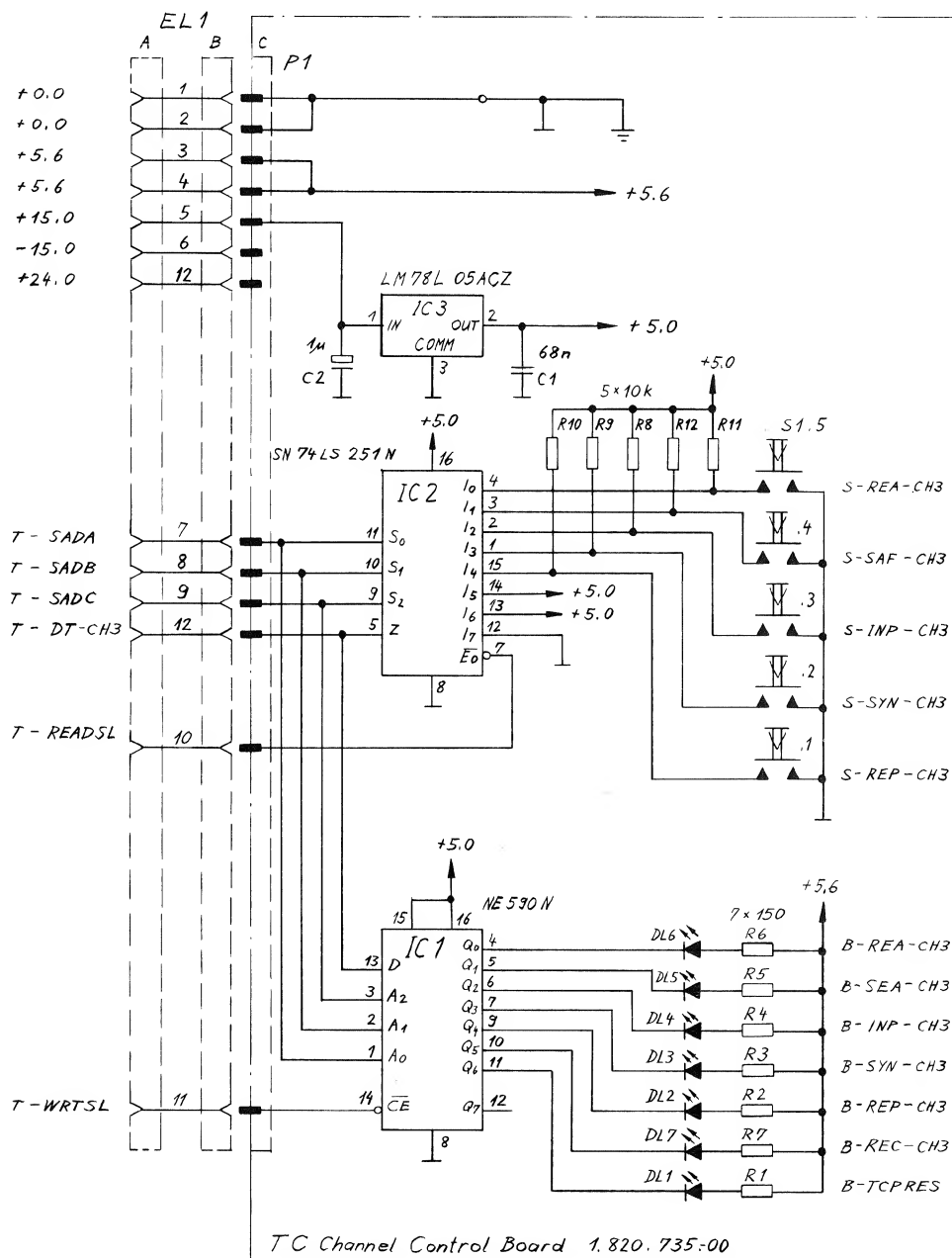
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	001	59.99.0205	68 nF	Ce		Note 1 - Yamachi Nr. FAS-16-17, Burndy Nr. FRS-16 B0-4P Connection cable Nr. 1.820.733.00					
C...	002	59.26.9109	1 uF	16V, Sal	Ph						
DL...	001	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie	Ce=Ceramic, Sal=Solid aluminium					
DL...	002	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie						
DL...	003	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie	MANUFACTURER: AMI=American Microsystem Inc., Fc=Fairchild, NS=National Semiconductors, Ph=Philips, Sie=Siemens, Sig=Signetics, St=Studer, TI=Texas Instruments.					
DL...	004	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie						
DL...	005	50.04.2131	CQV 15-5	Q 62703-Q 585	Sie						
DL...	006	50.04.2129	CQV 11-5	Q 62703-Q 571	Sie						
IC...	001	50.15.0102	NE590N		Sig						
IC...	002	50.06.0251	SN74LS251N	AM74LS251N	AMI, TI						
IC...	003	50.10.0107	LM78L05ACZ	uA78L05AHC	Fc, NS						
J...	001	54.14.5021	16 cont.	See note 1							
R...	001	57.11.4151	150 Ohm								
R...	002	57.11.4151	150 Ohm								
R...	003	57.11.4151	150 Ohm								
R...	004	57.11.4151	150 Ohm								
R...	005	57.11.4151	150 Ohm								
R...	006	57.11.4151	150 Ohm								
R...	007	57.11.4103	10 kOhm								
R...	008	57.11.4103	10 kOhm								
R...	009	57.11.4103	10 kOhm								
R...	010	57.11.4103	10 kOhm								
R...	011	57.11.4103	10 kOhm								
S...	001	1.820.732.01		502pole change over switch	St						

ORIG 82/08/06

TC Channel Control Board 1.820.735-00

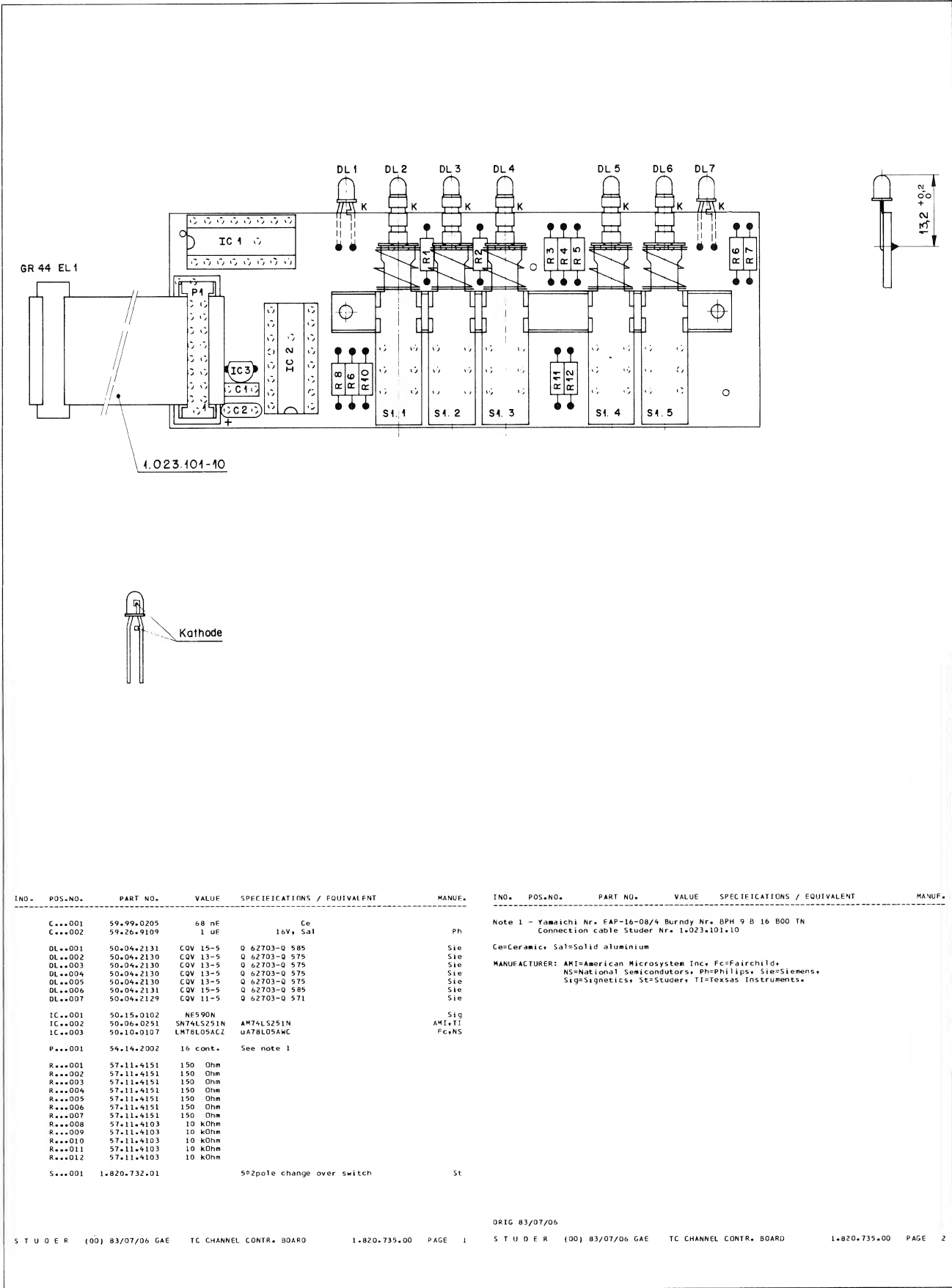
R	10, 9, 8, 12, 11, 6, 5, 4, 3, 2, 7, 1	
C	2,	1,

from Bus Connector Board



26.5.83	Gämpferle L511	A820 / A810	Time Code Section	Part of GRP 70
STUDER	TC Channel Control Board	SC	1.820.735-00	PAGE 1 OF 1

TC Channel Control Board 1.820.735-00

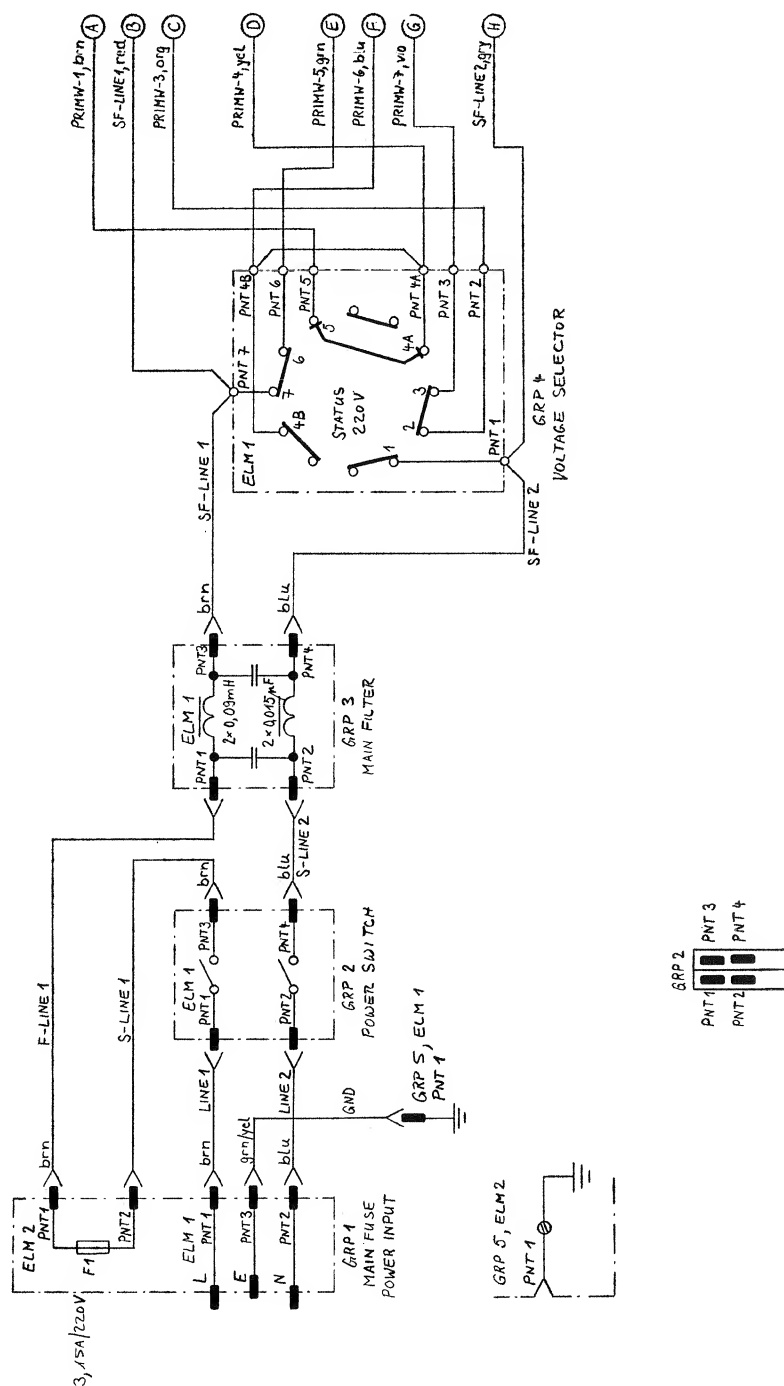


6. Tape Deck Section

ESE = Electrostatically sensitive assembly

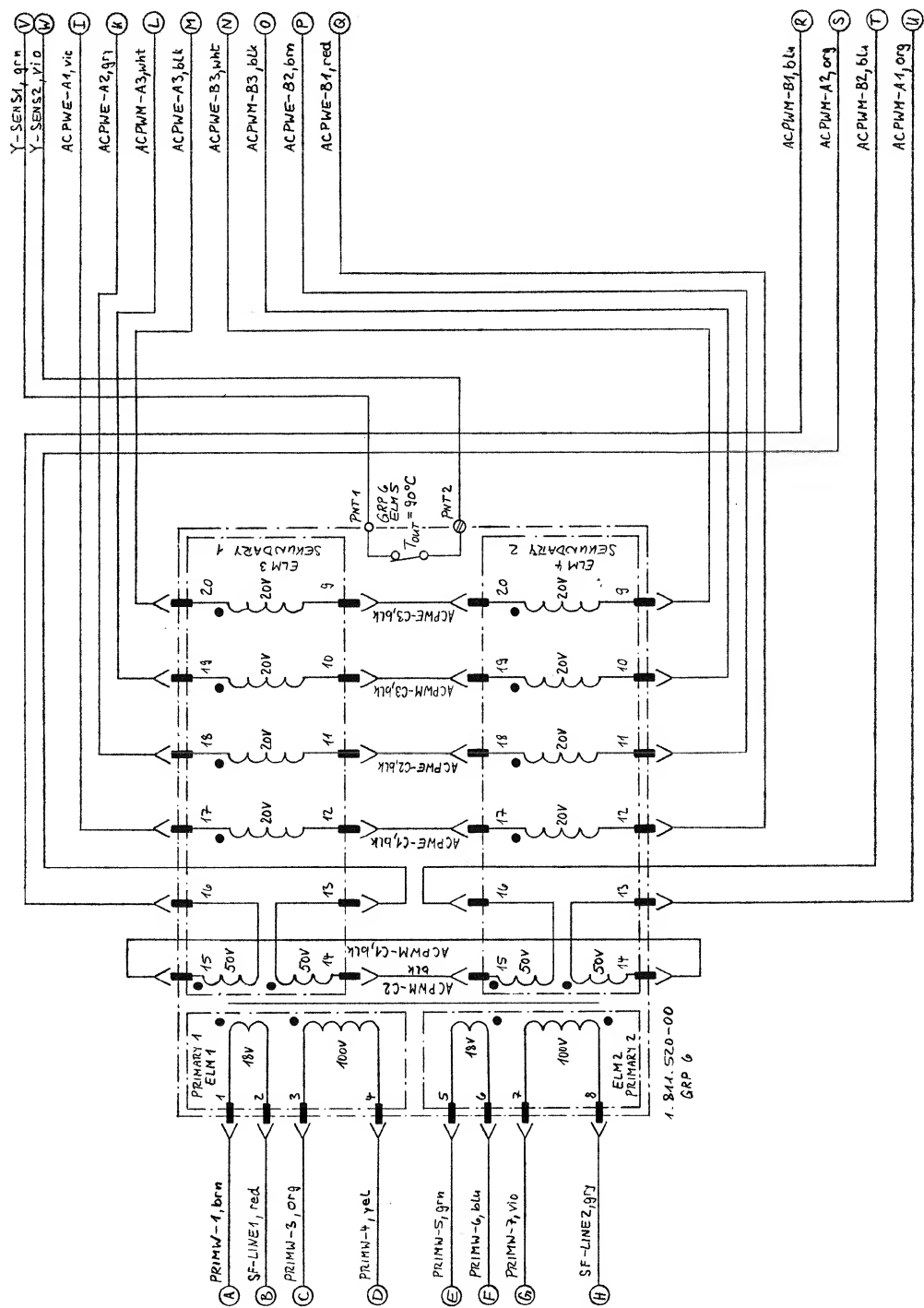
Contents		GRP/ELM	Page
Power Supply	1.811.510-00	GRP 1-12	6/1
Power Supply	1.811.510-81	GRP 1-12	6/7
Power Supply	1.811.510-82	GRP 1-12	6/14
Power Supply	1.811.510-83	GRP 1-12	6/19
Power Supply Connection Board	1.811.770.00	GRP 8	6/25
Fan Connector Board	1.811.799.00	GRP 10	6/26
Fan Connector Board	1.811.798.00	GRP 10	6/27
Block Diagram Switching Stabilizer PCB	1.820.790	GRP 30	6/29
Block Diagram Stabilizer/Limiter PCB	1.820.792	GRP 30	6/29
Switching Stabilizer	1.820.790.81	GRP 30	6/30
Switching Stabilizer	1.820.790.82	GRP 30	6/33
Basis Board	1.811.700.81	GRP 20	6/37
Basis Board	1.811.700.82	GRP 20	6/38
Block Diagram Tape Deck Control			6/39
Block Diagram Tape Deck Controller	1.811.774	GRP 27	6/40
Tape Deck Controller	1.811.774.20 ESE	GRP 27	6/41
Block Diagram Tape Deck Periphery Driver	1.811.779	GRP 25	6/47
Tape Deck Periphery DR PCB	1.811.779.00 ESE	GRP 25	6/49
Block Diagram Tape Deck Periphery Control	1.811.773	GRP 26	6/53
Tape Deck Periphery IF	1.811.773.00 ESE	GRP 26	6/55
Tape Deck Periphery IF	1.811.773.81 ESE	GRP 26	6/59
Block Diagram Spooling Motor Control			6/63
Block Diagram Spooling Motor Control	1.811.772.20	GRP 24	6/64
Spooling Motor Controller	1.811.772.20	GRP 24	6/65
Block Diagram Slew Rate Limiter Board	1.811.780	GRP 24	6/69
Slew Rate Limiter Board	1.811.780.00	GRP 24	6/71
Block Diagram Spooling Motor Controller	1.811.772.21	GRP 24	6/73
Spooling Motor Controller	1.811.772.21	GRP 24	6/75
Block Diagram Spooling Motor Drive Amplifier	1.811.771.00/81		6/81
Spooling Motor Drive Amplifier	1.811.771.00 ESE	GRP 31/32	6/83
Spooling Motor Drive Amplifier	1.811.771.81 ESE	GRP 31/32	6/85
Block Diagram (Survey) Capstan Motor Control			6/87
Block Diagram Capstan Control Unit General			6/88
Capstan Control Unit	1.820.764.00 ESE	GRP20/ELM42	6/89
Capstan Motor Interface	1.811.775.00	GRP20/ELM41	6/91
Block Diagram Capstan Motor Drive Amp. PCB	1.810.774 ESE		6/93
Capstan Motor Drive Amplifier PCB	1.820.774.00	GRP 85	6/95
Block Diagram Tacho Sensor Electronics PCB	1.021.695 ESE		6/97
Tacho Sensor Electronics PCB	1.021.695.83	GRP 84	6/99
Hall Sensor PCB	1.021.697.00		6/101
Tape Tension Sensor Left	1.811.730.00	GRP 82	6/103
Tape Move Sensor PCB	1.811.731.00	GRP82/ELM3	6/105
Tape Move Sensor PCB	1.811.731.81	GRP82/ELM3	6/107
Tape Move Sensor PCB	1.811.731.82	GRP82/ELM3	6/109
Tape Move Sensor	1.811.731.83	GRP82/ELM3	6/111
Tape Tension Sensor Right	1.811.728.00	GRP 83	6/113

Power Supply 1.811.510-00



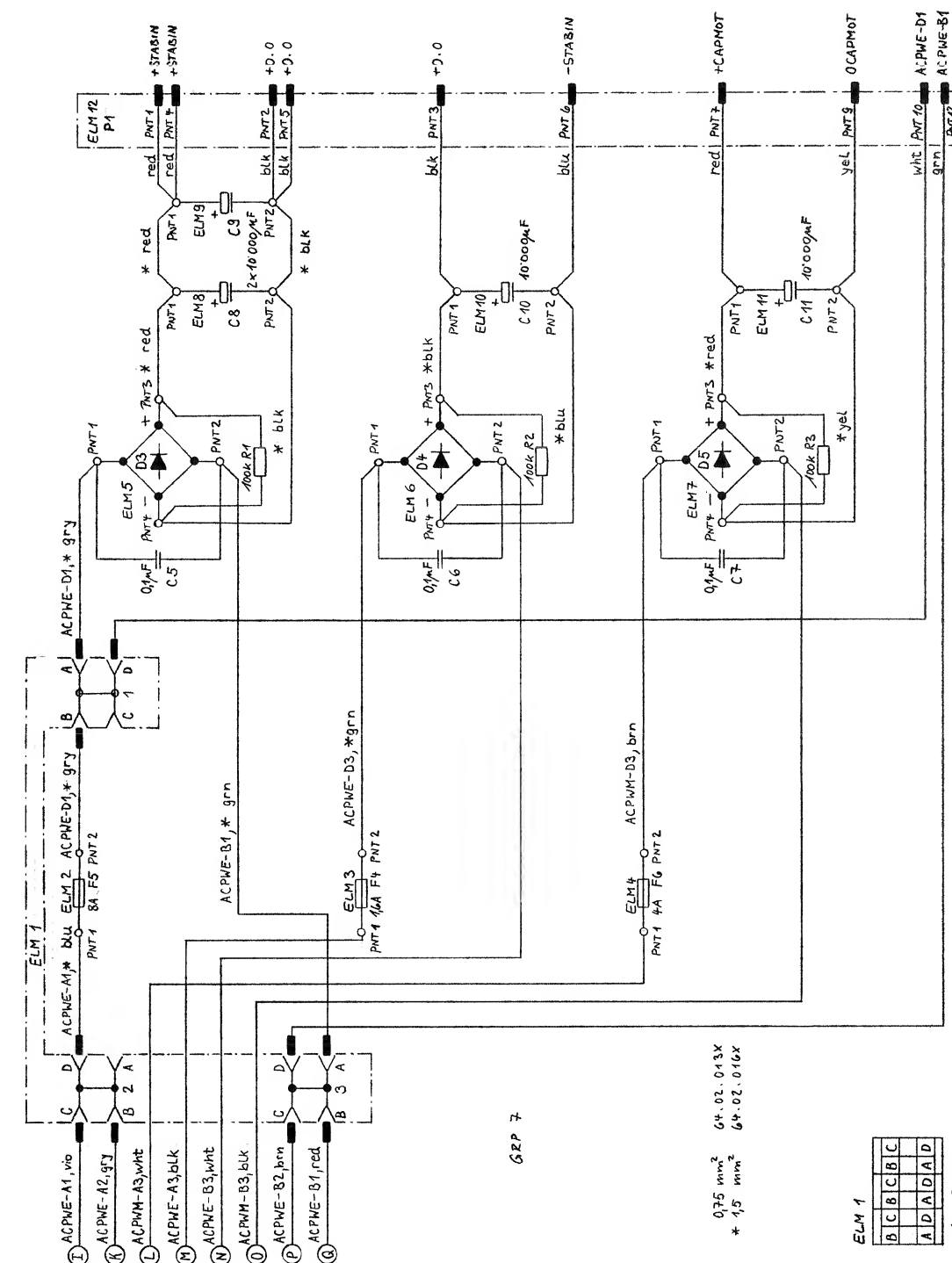
① 1.03.85 LN	...	...	...	...
MAIN INPUT UNIT (GRP 1...5)				PAGE 1 OF 5
STUDER		POWER SUPPLY		1.811.510-00

Power Supply 1.811.510-00



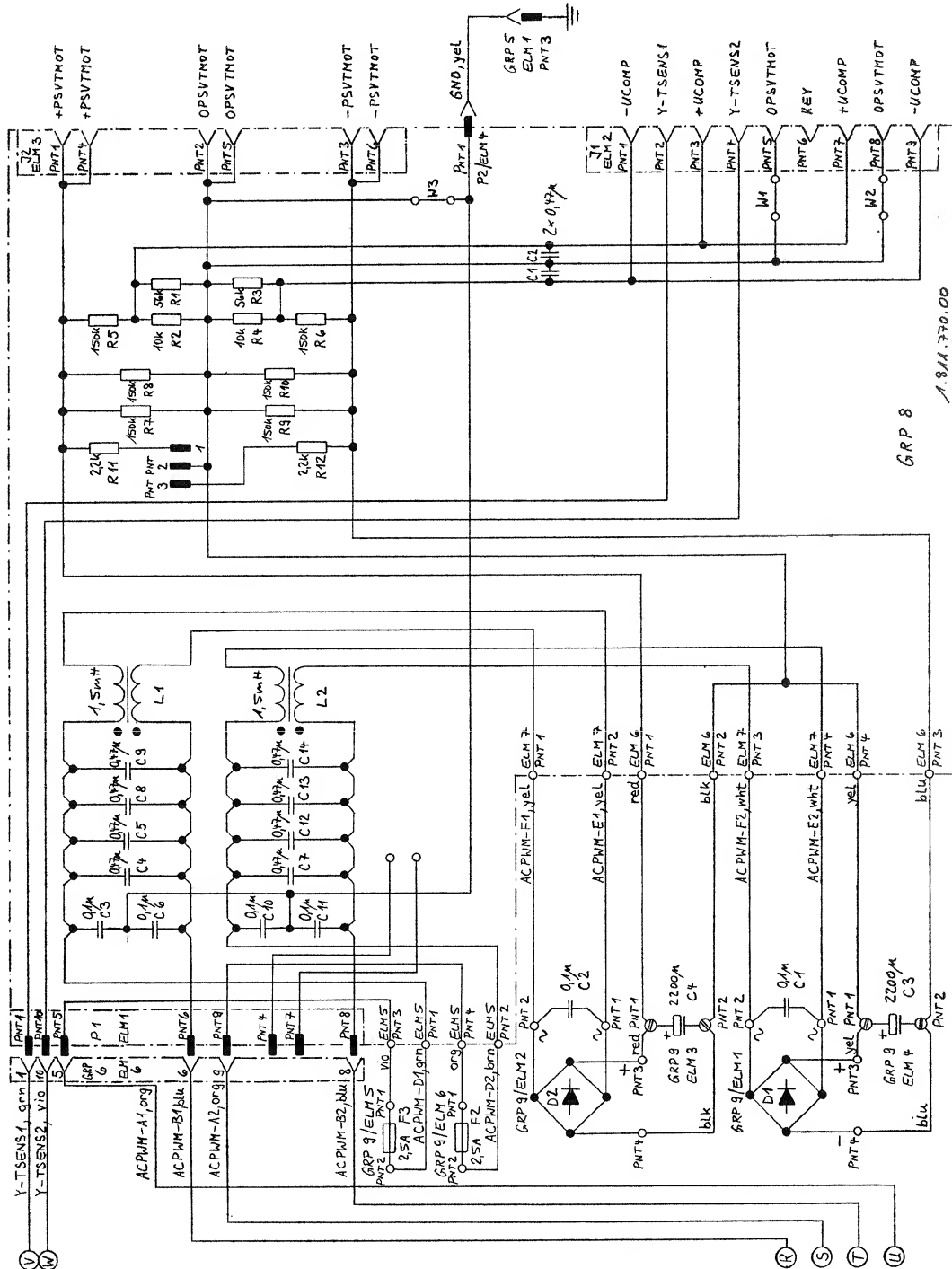
0 46.08.85 LN	...	...	...	...
STUDER			MAIN TRANSFORMER (GRP 6)	
POWER SUPPLY			PAGE 2 OF 5	
			1.811.510-00	

Power Supply 1.811.510-00

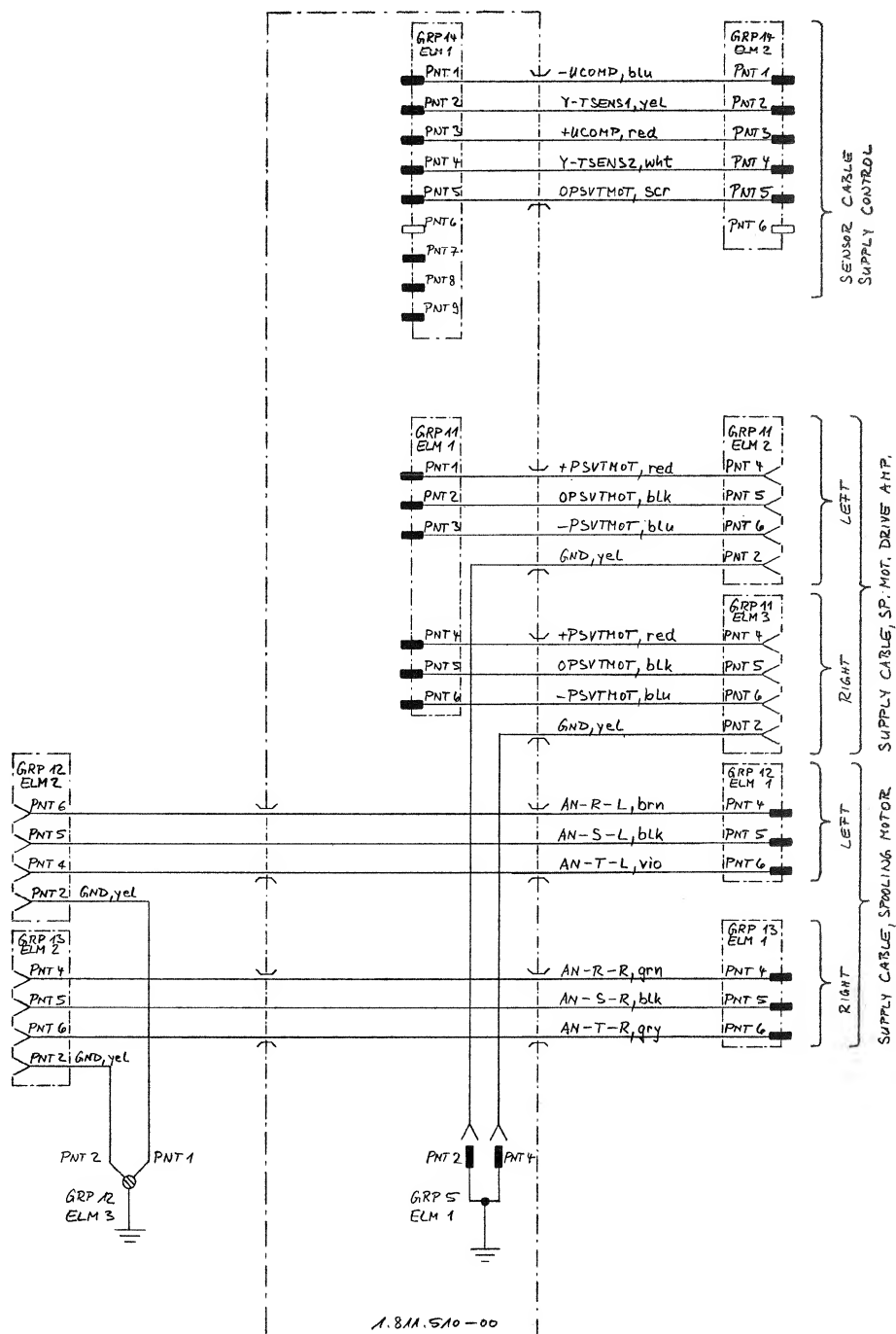


① 28.08.85 LN	○ . .	○ . .	○ . .	○ . .
	RECTIFIER UNIT (GRP 7)			PAGE 3 OF 5
STUDER	POWER SUPPLY			1.844.510-00

Power Supply 1.811.510-00

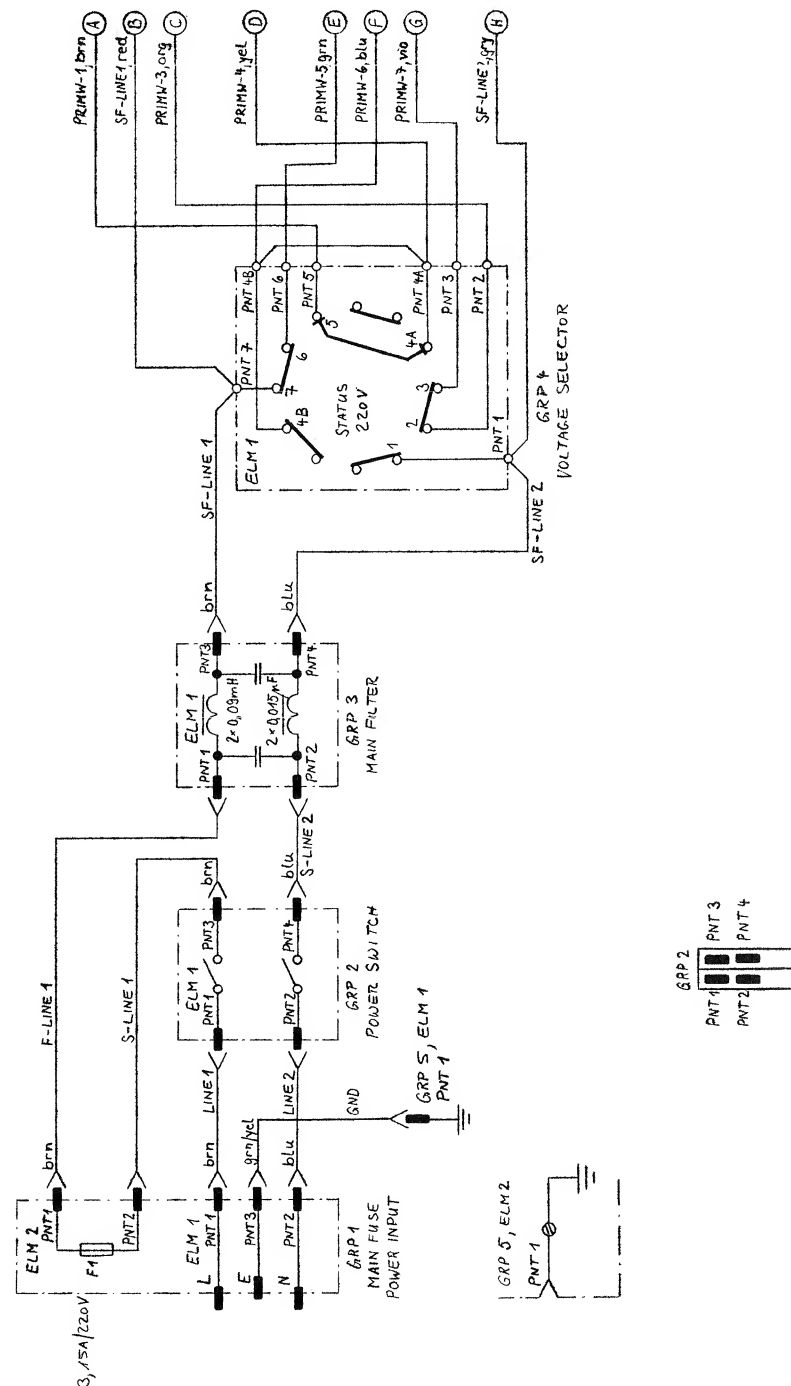


26.08.85 LN	POWER SUPPLY CONNECTION BOARD (GRP 5/6/8/9)	PAGE 4 OF 5
STUDER	POWER SUPPLY	1.811.510-00

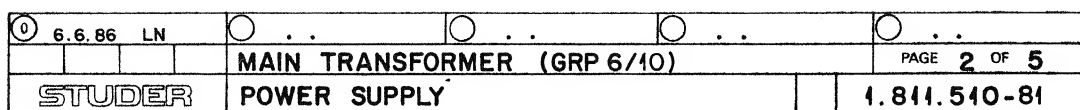


① 28.08.85 LN	○ . .	○ . .	○ . .	○ . .
	CABLES			PAGE 5 OF 5
STUDER	POWER SUPPLY			1.844.540-00

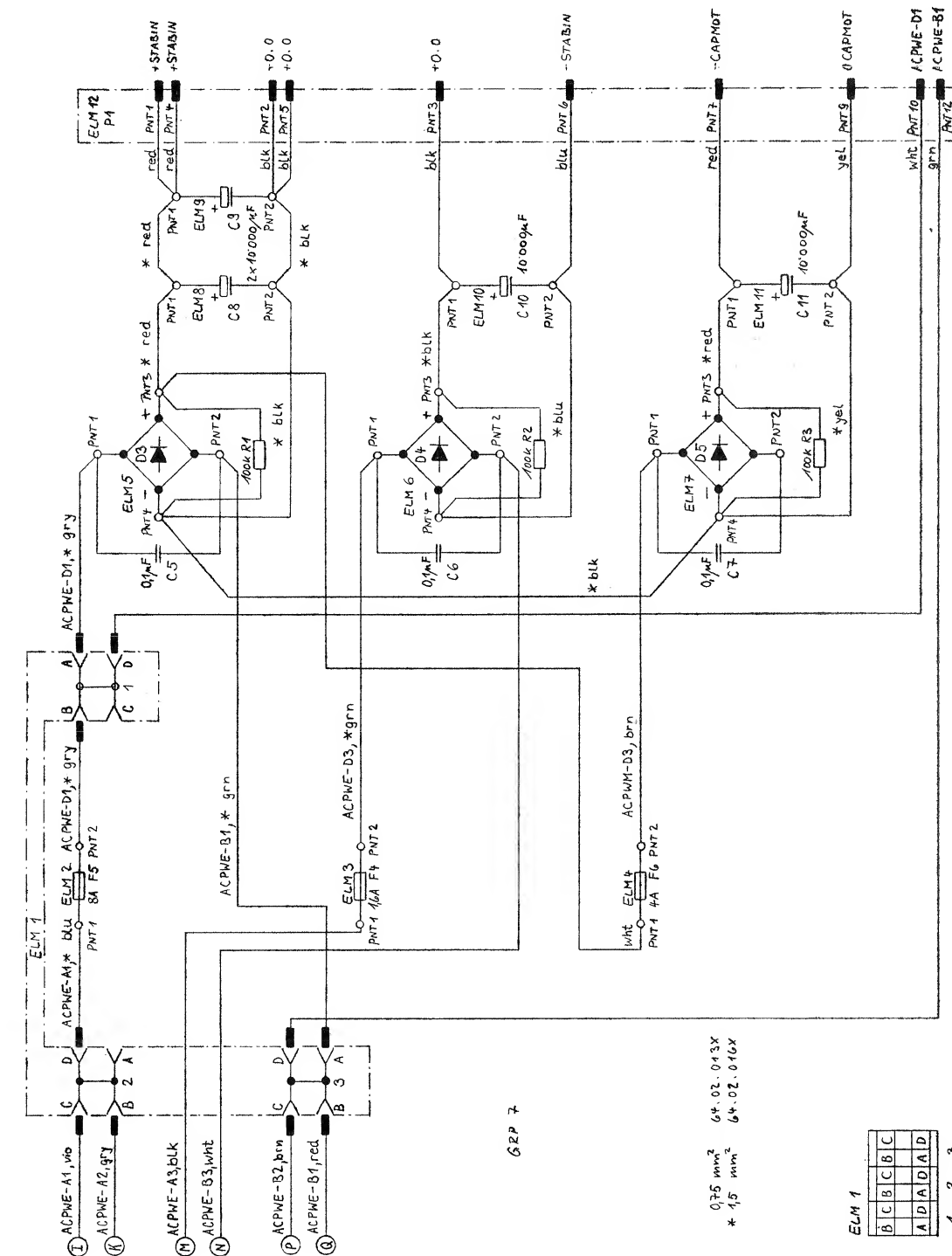
Power Supply 1.811.510-81



6.6.86 LN	...	...	...	...
MAIN INPUT UNIT (GRP 1...5)				PAGE 1 OF 5
STUDER POWER SUPPLY				1.811.510-81

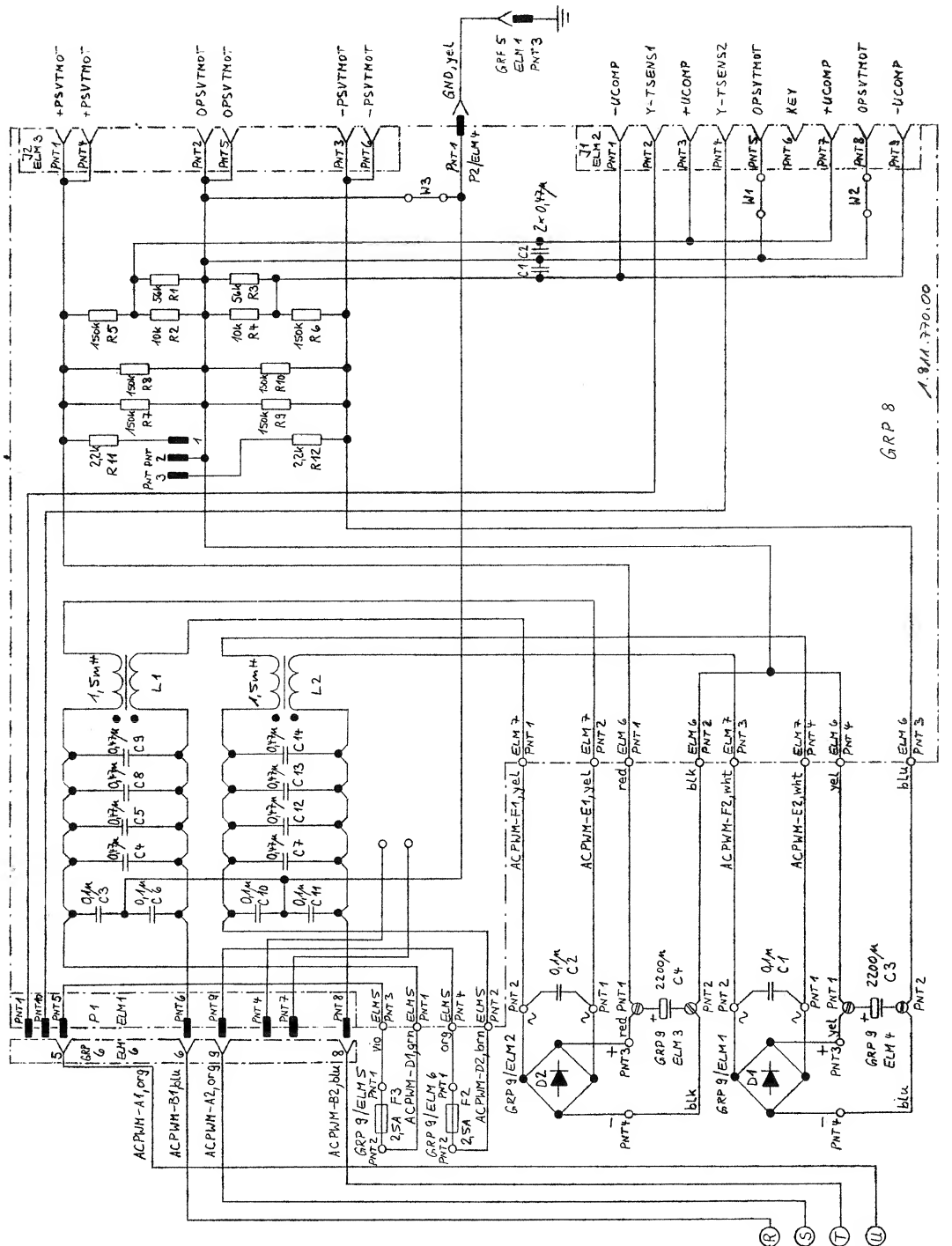


Power Supply 1.811.510-81



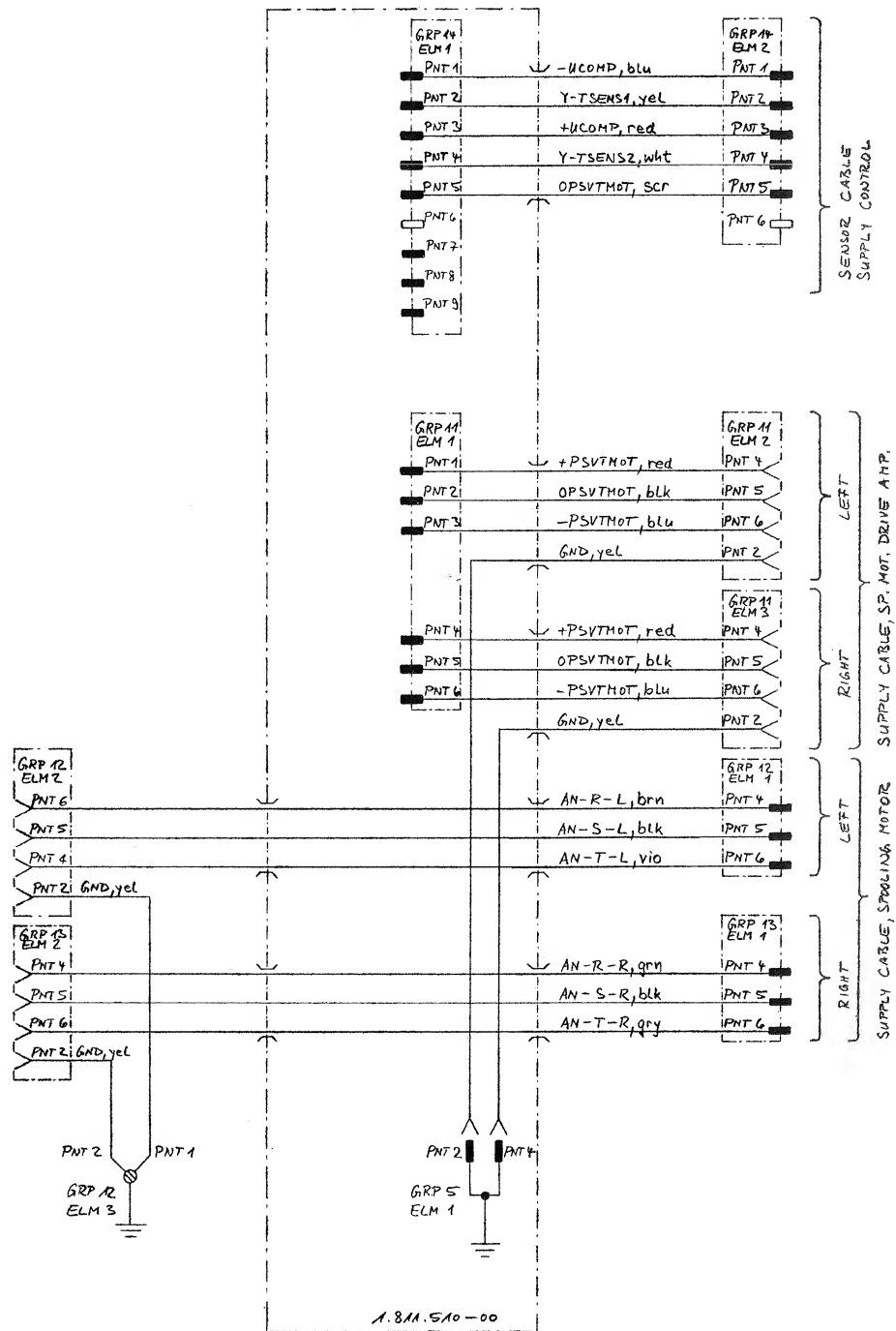
6.6.86 LN	RECTIFIER UNIT (GRP 7)	PAGE 3 OF 5
STUDER	POWER SUPPLY	1.811.510-81

Power Supply 1.811.510-81



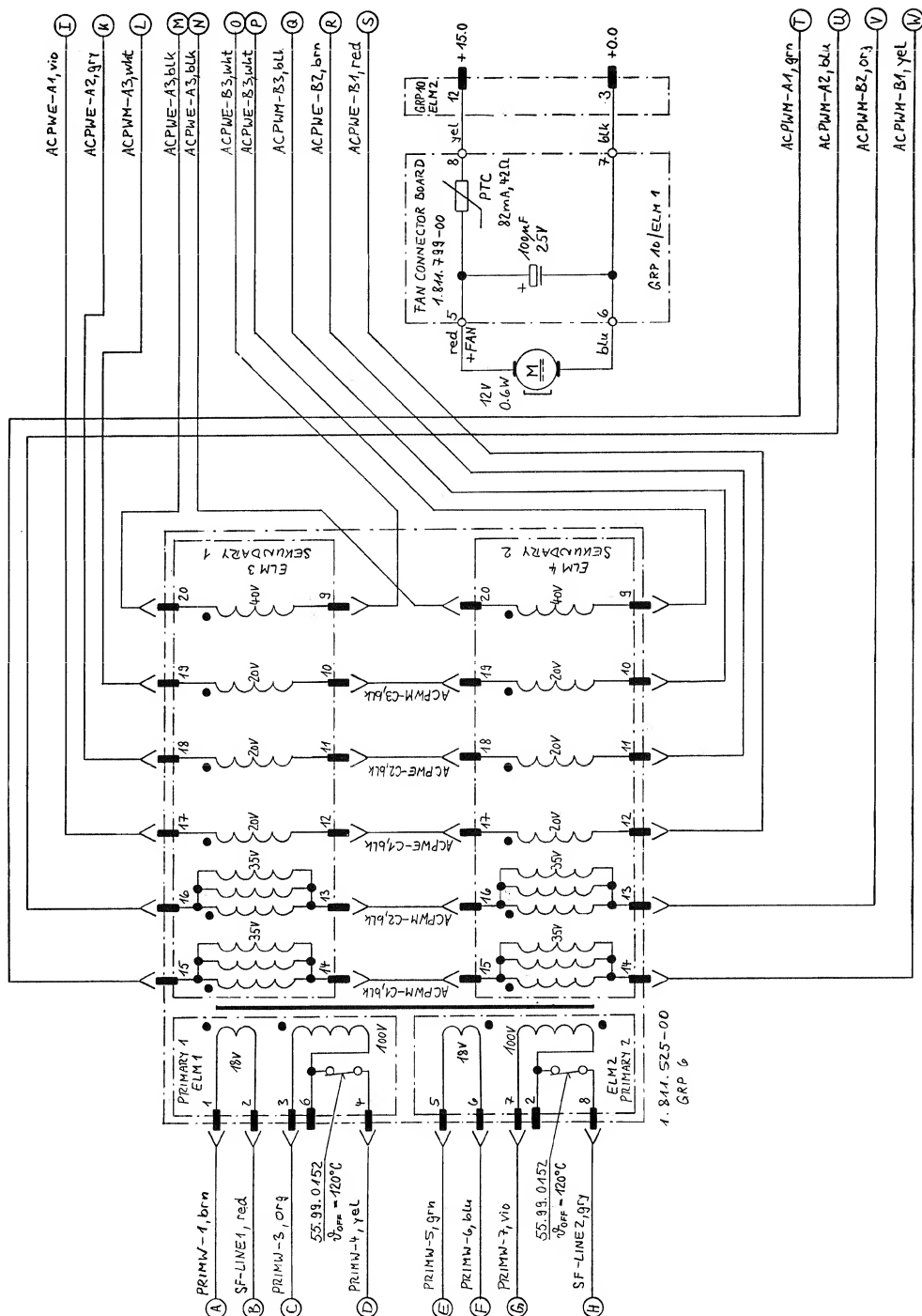
6.6.86 LN	POWER SUPPLY CONNECTION BOARD (GRP 5/6/8/9)	PAGE 4 OF 5
STUDER	POWER SUPPLY	1.811.510-81

Power Supply 1.811.510-81



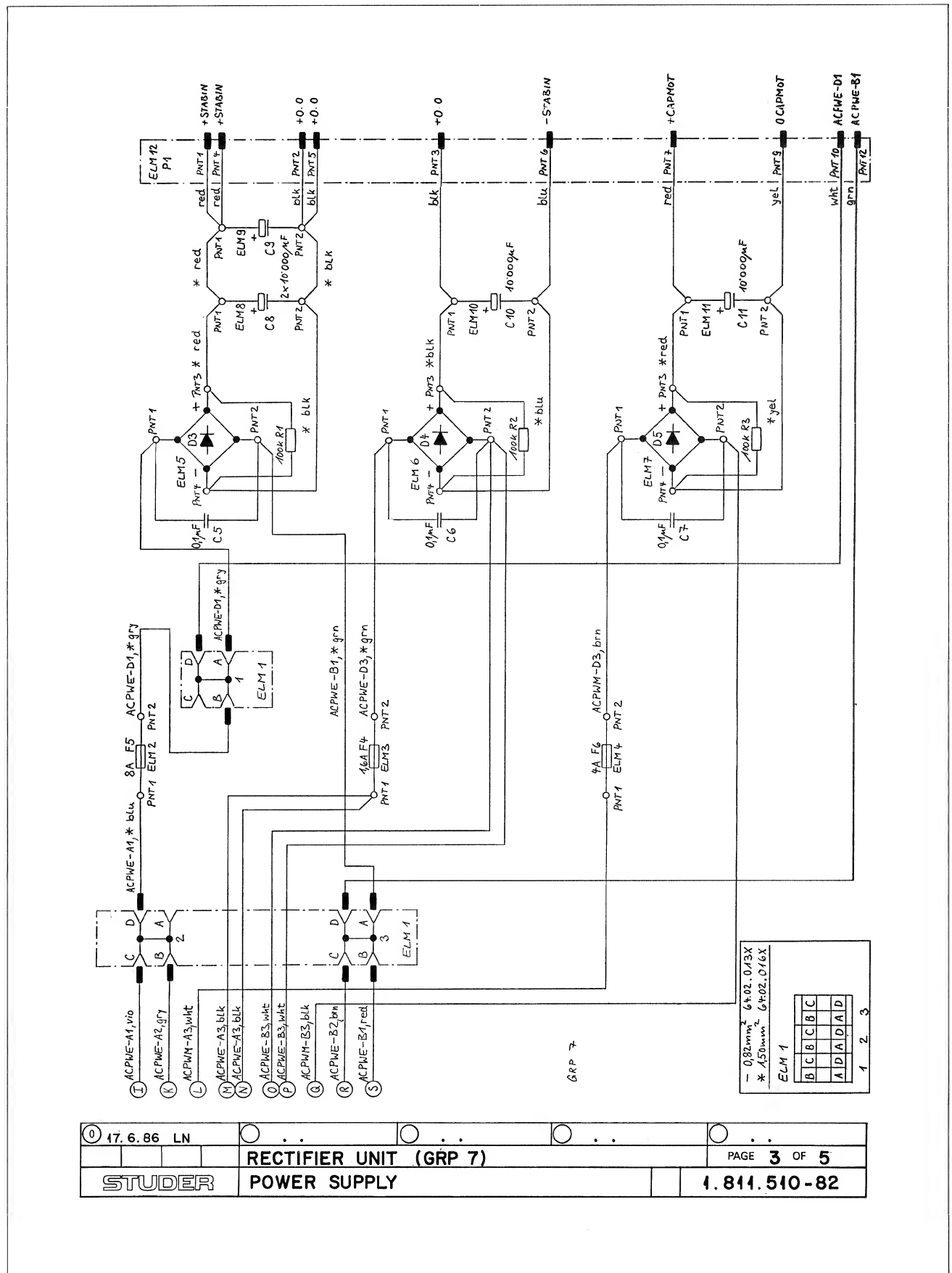
① 6.6.86 LN	...	...	...	...
CABLES			PAGE 5 OF 5	
STUDER			POWER SUPPLY	
			1.811.510-81	

Power Supply 1.811.510-82

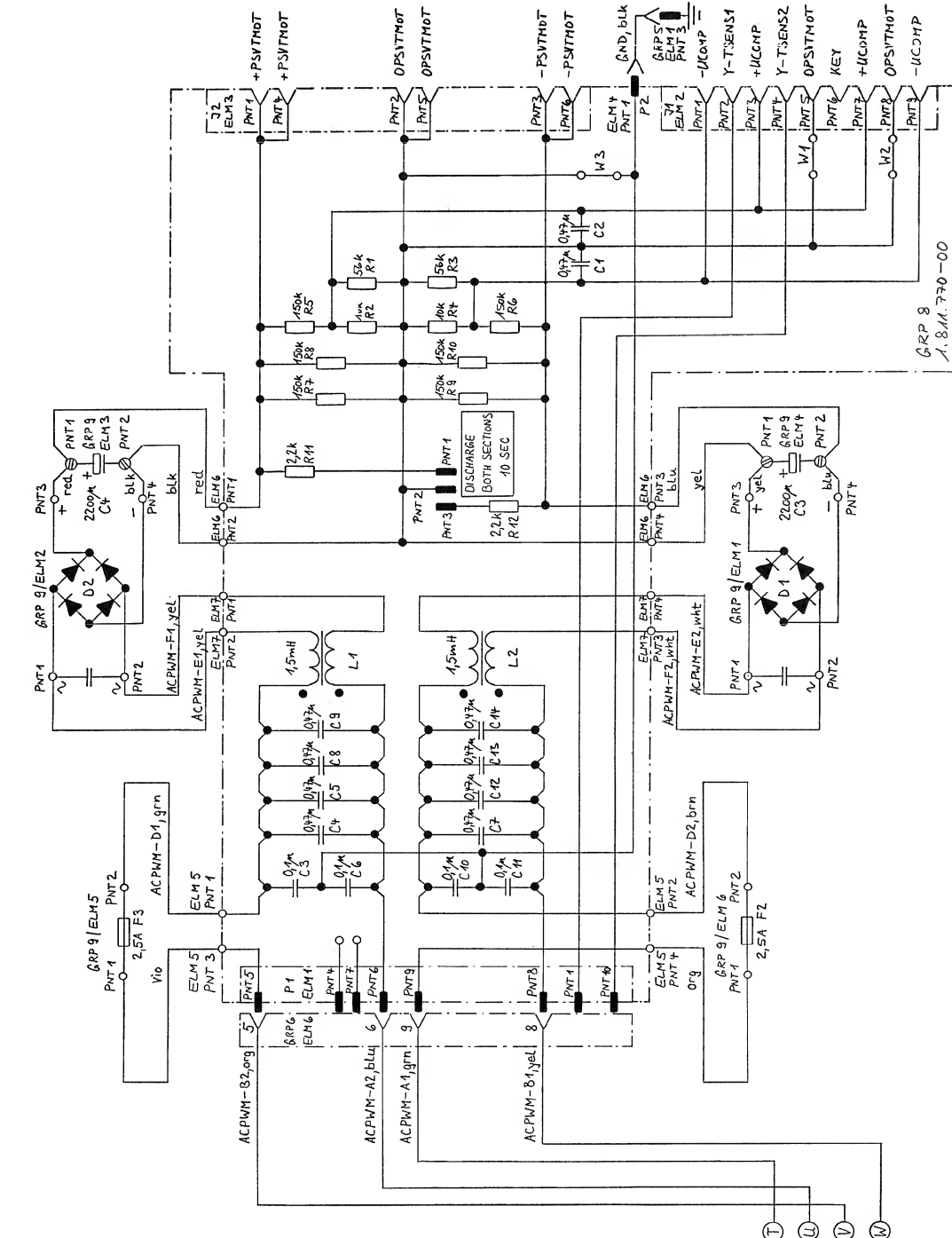


17.6.86 LN	1.811.799-00
STUDER	MAIN TRANSFORMER (GRP 6)
POWER SUPPLY	PAGE 2 OF 5
	1.811.510-82

Power Supply 1.811.510-82

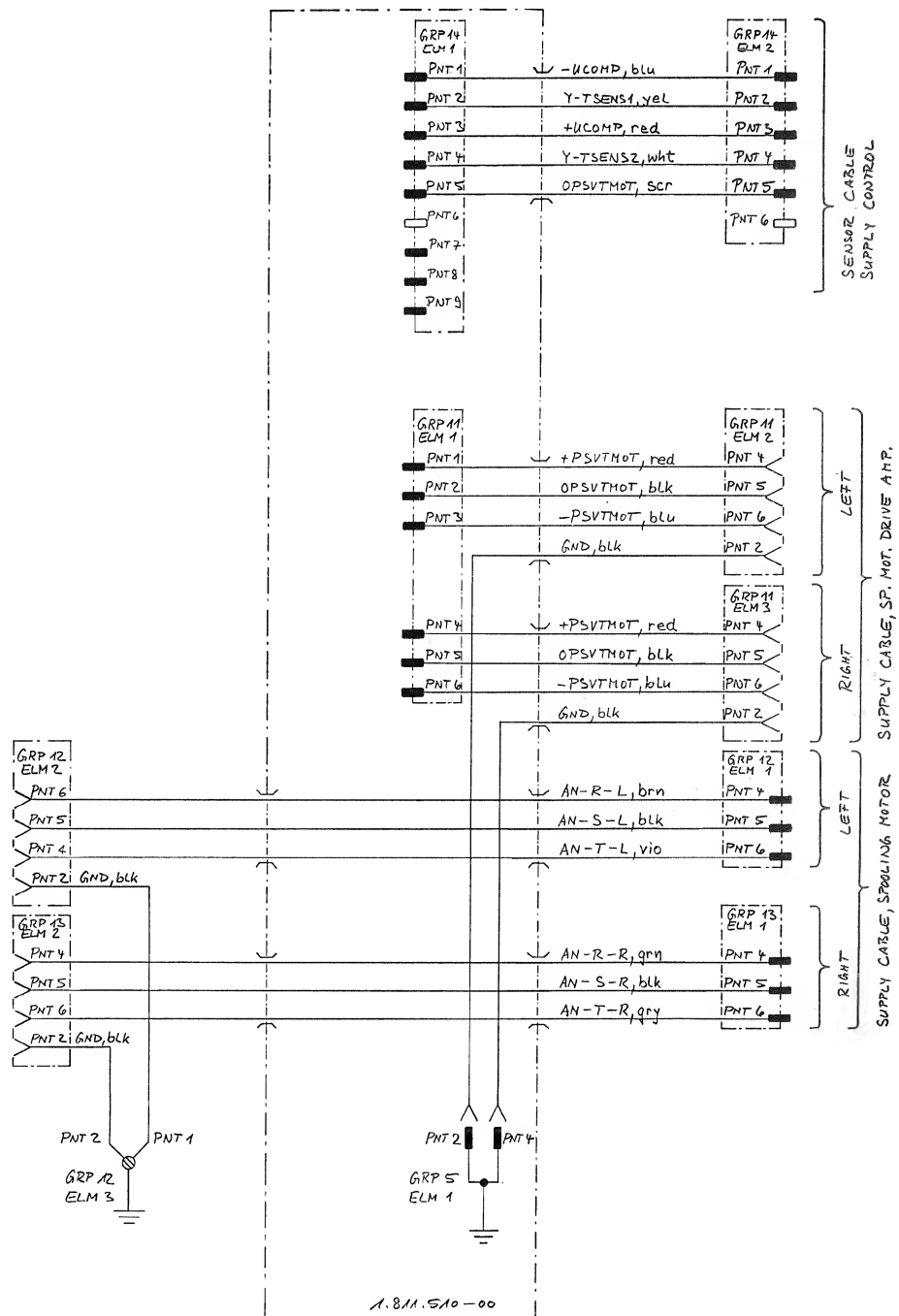


Power Supply 1.811.510-82



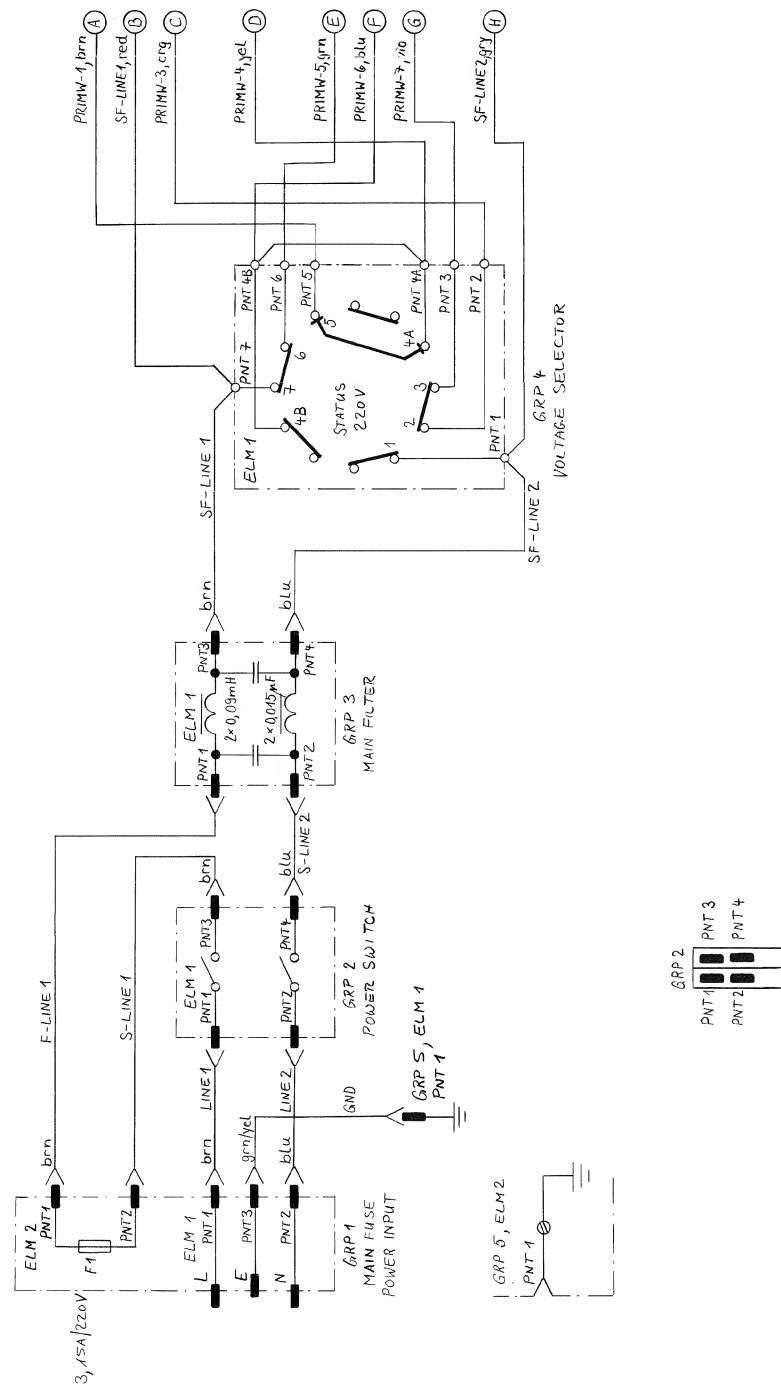
0 17.6.86 LN	POWER SUPPLY CONNECTION BOARD (GRP 5/6/8/9)	PAGE 4 OF 5
STUDER	POWER SUPPLY	1.811.510-82

Power Supply 1.811.510-82

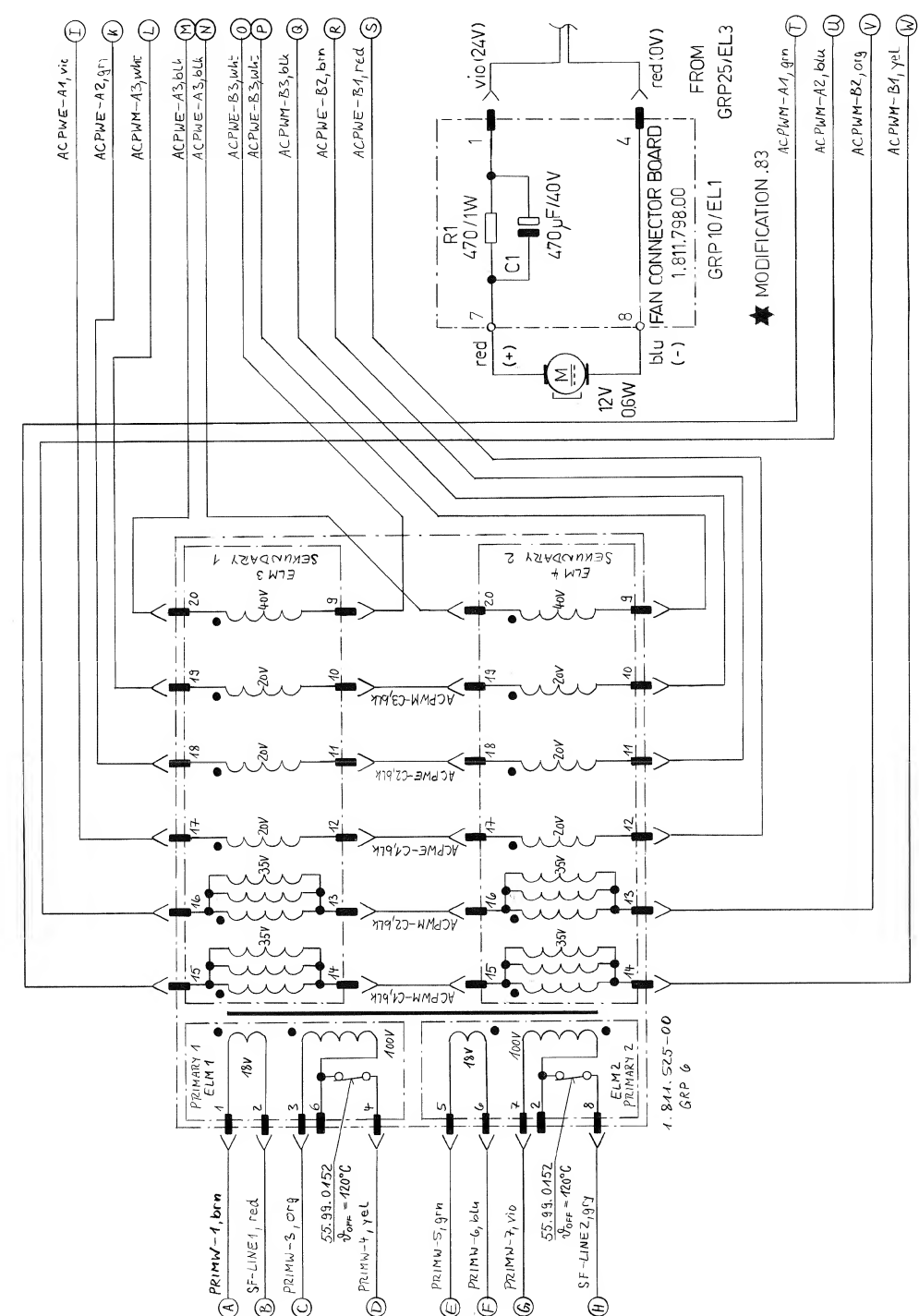


① 17.6.86 LN	...	...	...	...
	CABLES			PAGE 5 OF 5
STUDER	POWER SUPPLY			1.811.510-82

Power Supply 1.811.510-83

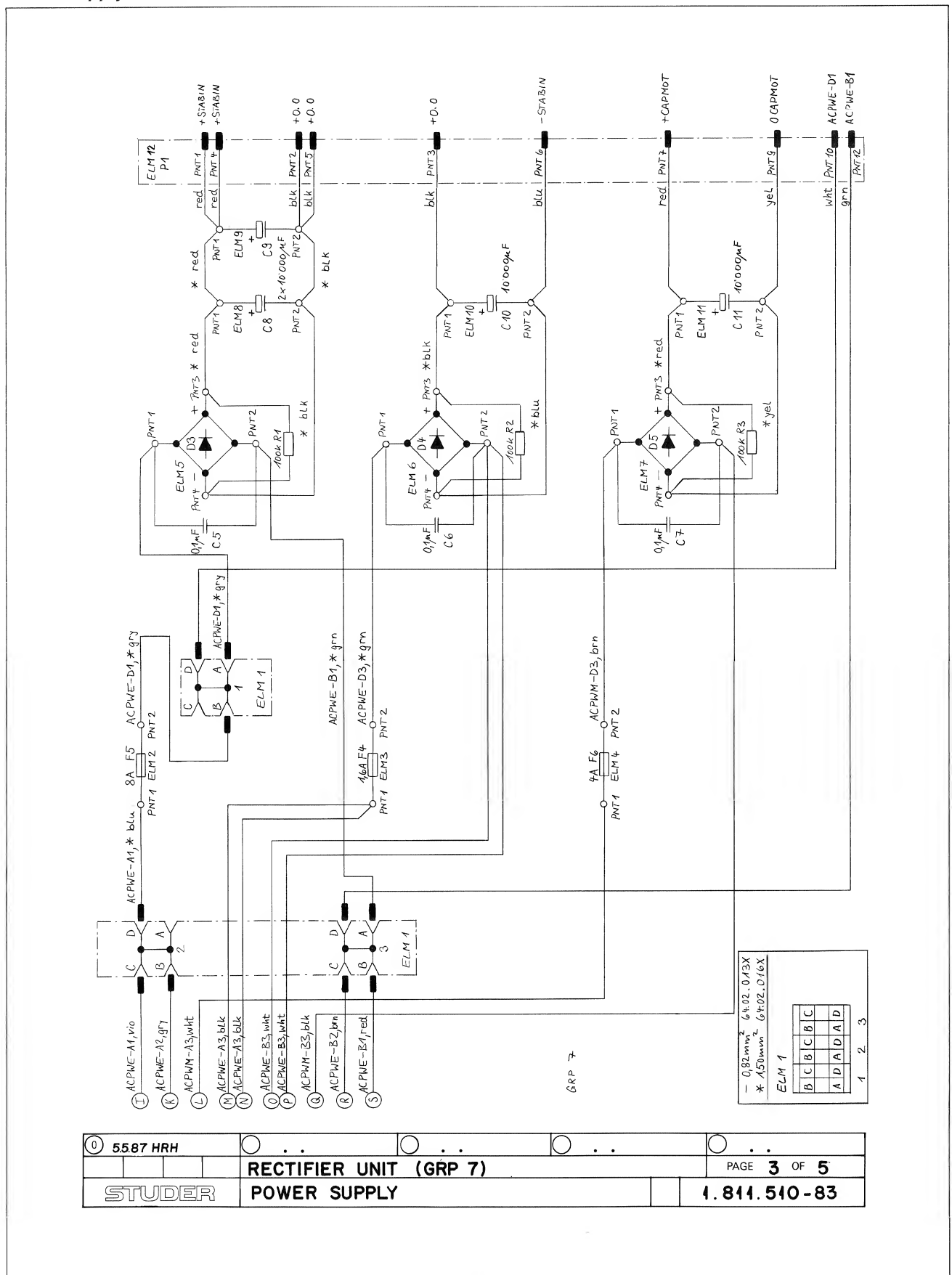


5.5.87 HRH	...	...	...	...
MAIN INPUT UNIT (GRP 1...5)				PAGE 1 OF 5
STUDER POWER SUPPLY				1.811.510-83

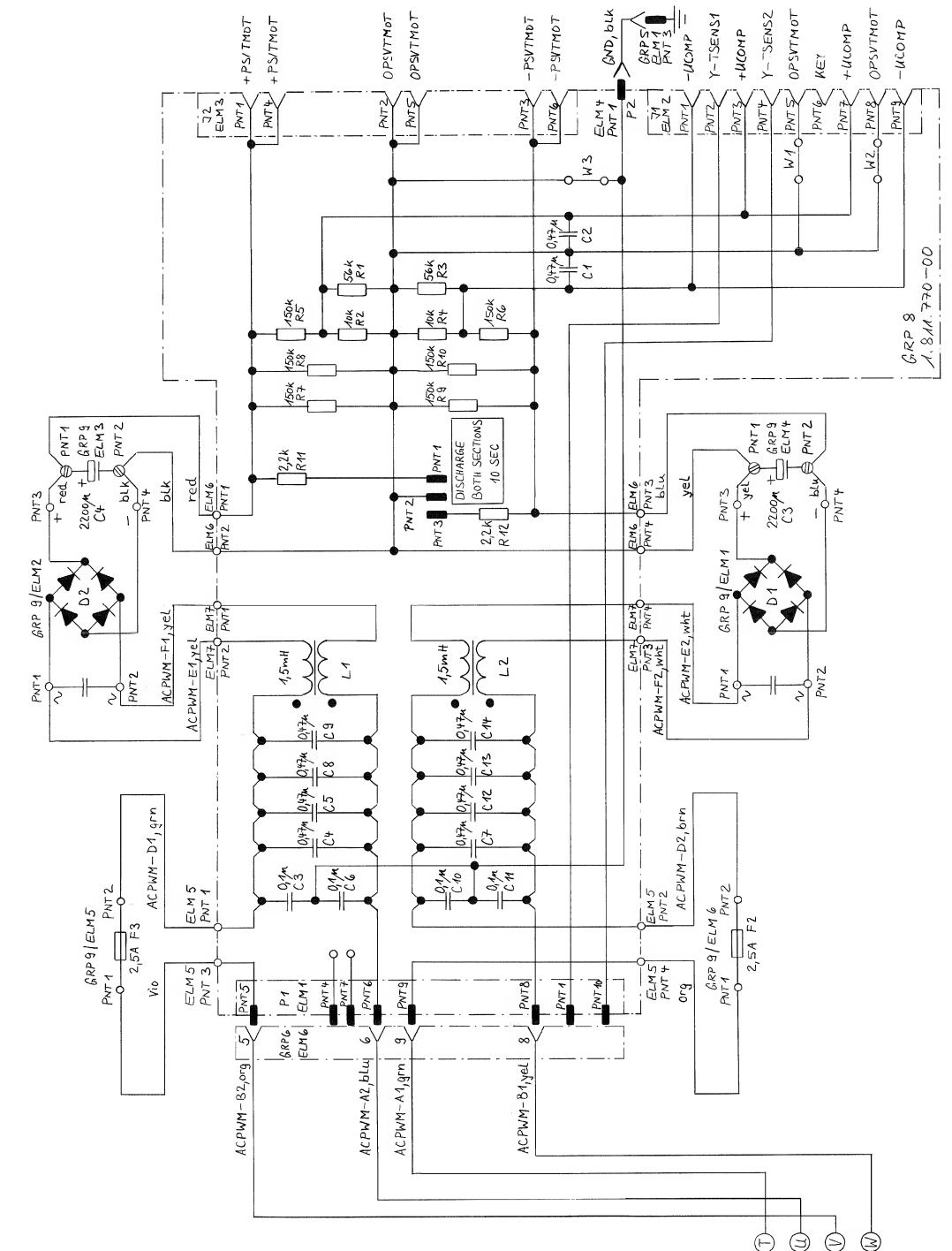


① 5.587 HRH	○ . .	○ . .	○ . .	○ . .
	MAIN TRANSFORMER (GRP 6)			PAGE 2 OF 5
STUDER	POWER SUPPLY			1.844.540-83

Power Supply 1.811.510-83

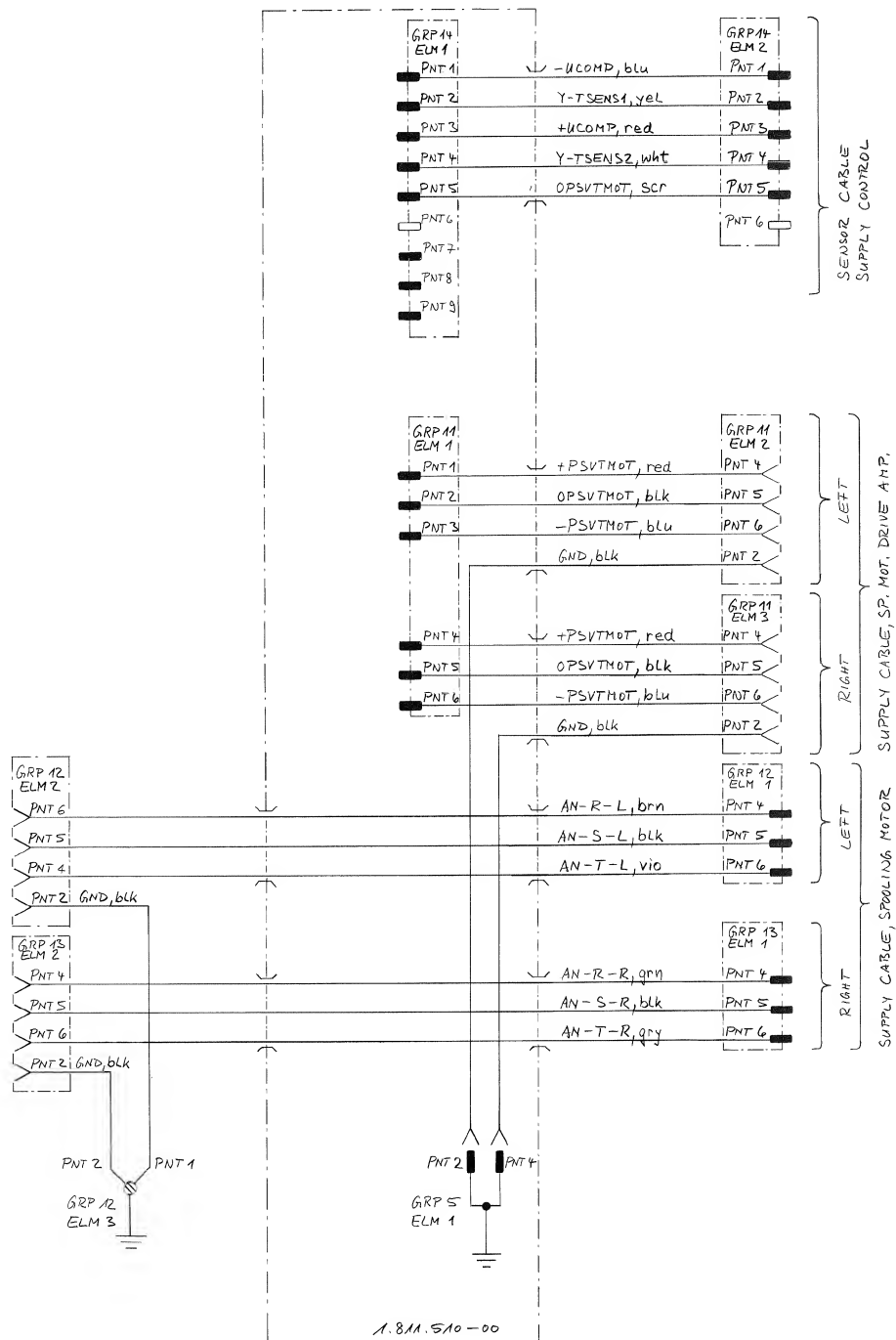


Power Supply 1.811.510-83

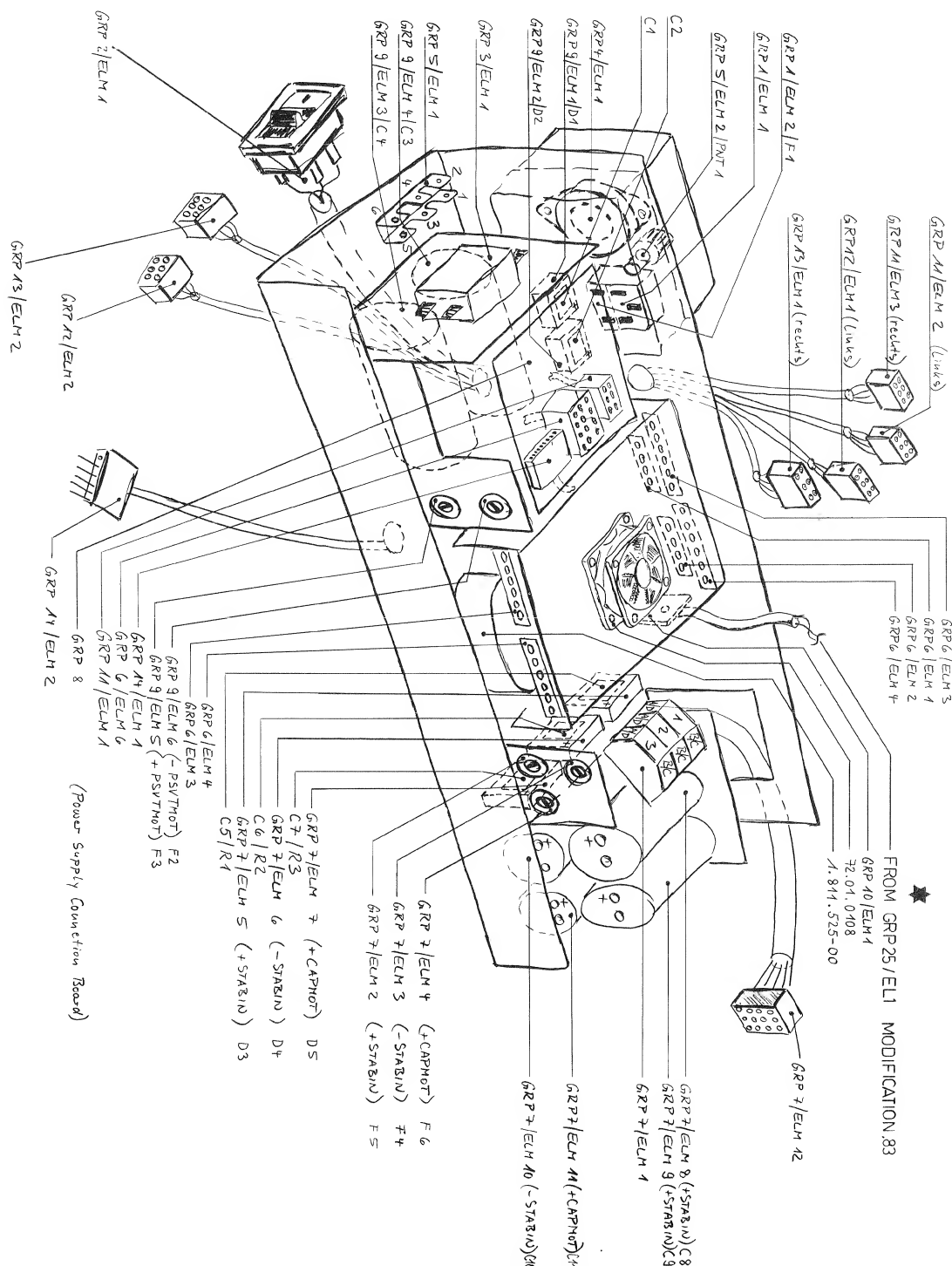


① 5.5.87	HRH	...	...	...	1.811.770-00
POWER SUPPLY CONNECTION BOARD (GRP 5/6/8/9)				PAGE 4 OF 5	
STUDER POWER SUPPLY				1.811.510-83	

Power Supply 1.811.510-83

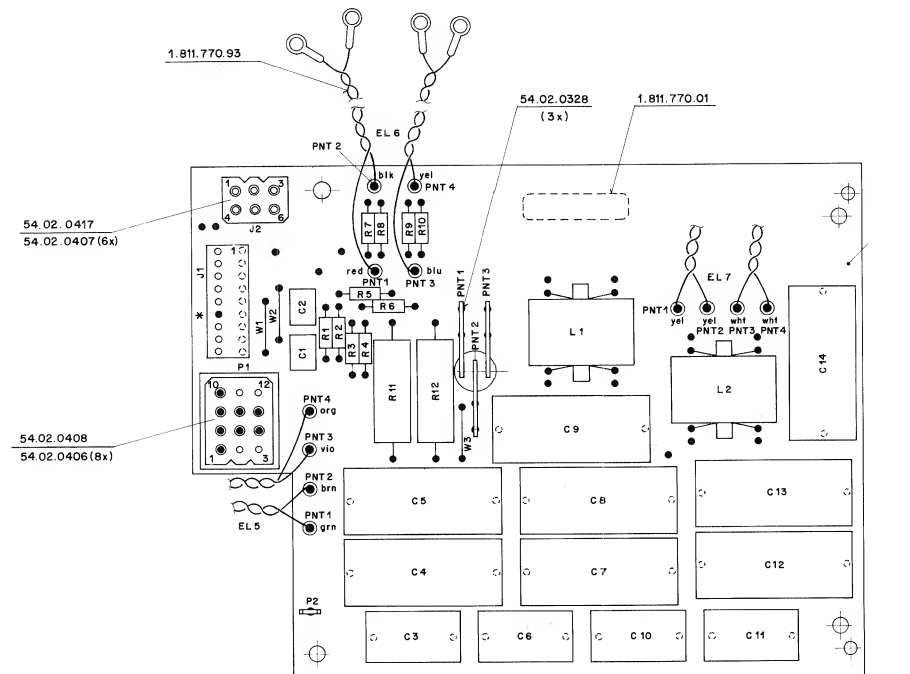
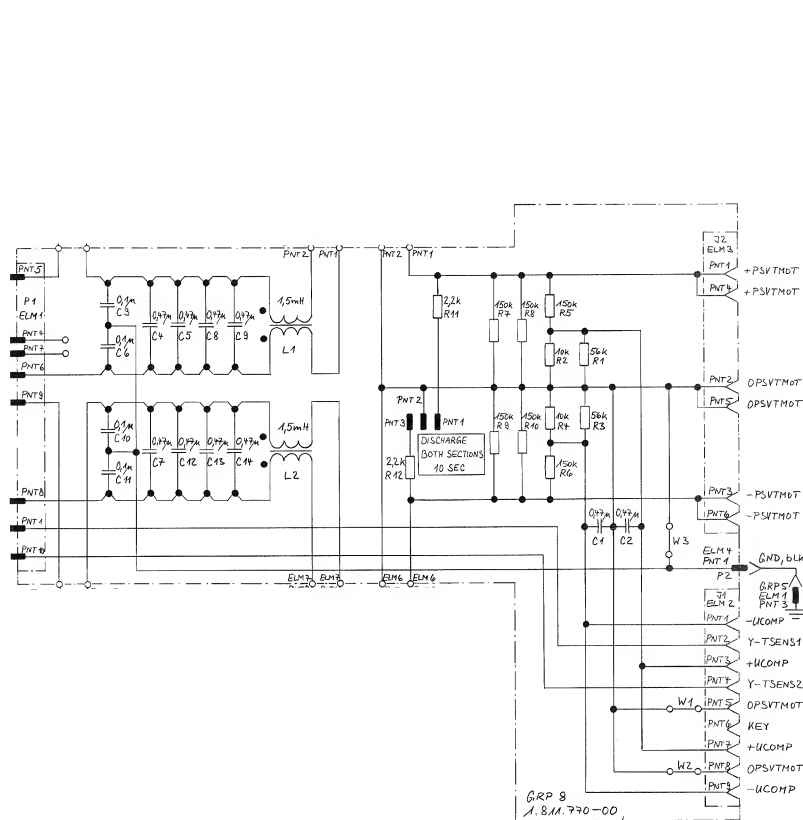


0 55.87 HRH	...	...	...	...
	CABLES			PAGE 5 OF 5
STUDER	POWER SUPPLY			1.811.510-83

Power Supply 1.811.510-83

0	5.587	HRH		..	..	..	..
				PAGE OF			
STUDER		POWER SUPPLY				1.844.510-83	

Power Supply Connection Board 1.811.770.00

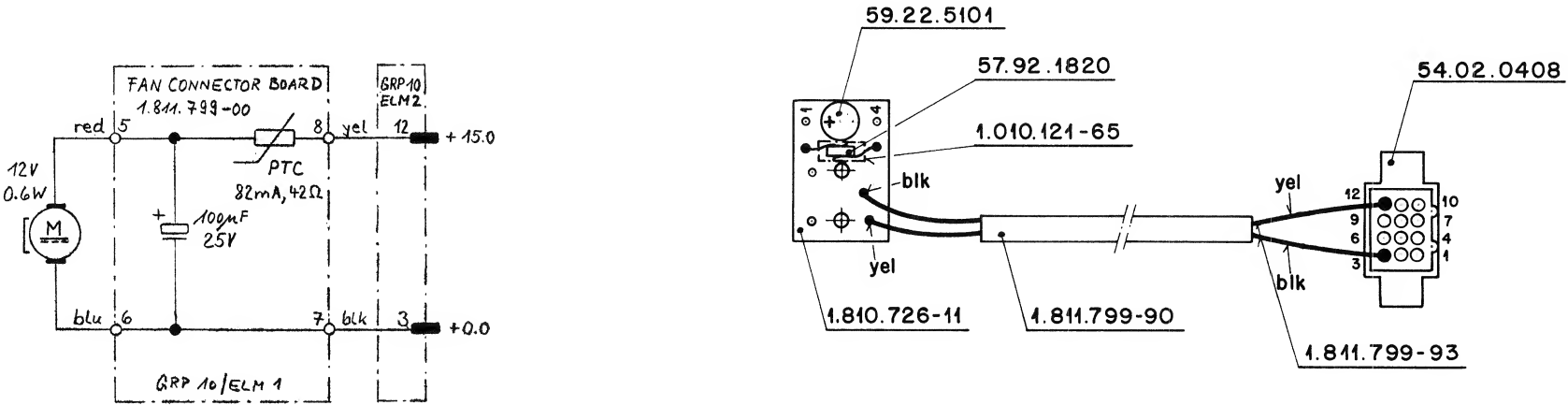


IND.	PDS+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PDS+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	54-24-0874	0.47 uF	100V	63V, PREP		C.....1	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....2	54-24-0874	0.47 uF	100V	63V, PREP		C.....2	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....3	54-24-0874	0.47 uF	100V	63V, PREP		C.....3	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....4	54-24-0874	0.47 uF	100V	63V, PREP		C.....4	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....5	54-24-0874	0.47 uF	100V	63V, PREP		C.....5	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....6	54-24-0874	0.47 uF	100V	63V, PREP		C.....6	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....7	54-24-0874	0.47 uF	100V	63V, PREP		C.....7	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....8	54-24-0874	0.47 uF	100V	63V, PREP		C.....8	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....9	54-24-0874	0.47 uF	100V	63V, PREP		C.....9	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....10	54-24-0874	0.47 uF	100V	63V, PREP		C.....10	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....11	54-24-0874	0.47 uF	100V	63V, PREP		C.....11	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....12	54-24-0874	0.47 uF	100V	63V, PREP		C.....12	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....13	54-24-0874	0.47 uF	100V	63V, PREP		C.....13	54-24-0874	0.47 uF	100V	63V, PREP	ST
C.....14	54-24-0874	0.47 uF	100V	63V, PREP		C.....14	54-24-0874	0.47 uF	100V	63V, PREP	ST
L.....1	52-24-0100	1.5 mH			ST	L.....1	52-24-0100	1.5 mH			ST
L.....2	52-24-0100	1.5 mH			ST	L.....2	52-24-0100	1.5 mH			ST
R.....1	57-11-0983	50 kOhm	10			R.....1	57-11-0983	50 kOhm	10		
R.....2	57-11-0983	50 kOhm	10			R.....2	57-11-0983	50 kOhm	10		
R.....3	57-11-0983	50 kOhm	10			R.....3	57-11-0983	50 kOhm	10		
R.....4	57-11-0983	50 kOhm	10			R.....4	57-11-0983	50 kOhm	10		
R.....5	57-11-0983	50 kOhm	10			R.....5	57-11-0983	50 kOhm	10		
R.....6	57-11-0983	50 kOhm	10			R.....6	57-11-0983	50 kOhm	10		
R.....7	57-11-0983	50 kOhm	10			R.....7	57-11-0983	50 kOhm	10		
R.....8	57-11-0983	50 kOhm	10			R.....8	57-11-0983	50 kOhm	10		
R.....9	57-11-0983	50 kOhm	10			R.....9	57-11-0983	50 kOhm	10		
R.....10	57-11-0983	50 kOhm	10			R.....10	57-11-0983	50 kOhm	10		
R.....11	57-11-0983	50 kOhm	10			R.....11	57-11-0983	50 kOhm	10		
R.....12	57-11-0983	50 kOhm	10			R.....12	57-11-0983	50 kOhm	10		
W.....1	1-010-324-66	wire bridge				W.....1	1-010-324-66	wire bridge			
W.....2	1-010-324-66	wire bridge				W.....2	1-010-324-66	wire bridge			
W.....3	1-010-324-66	wire bridge				W.....3	1-010-324-66	wire bridge			

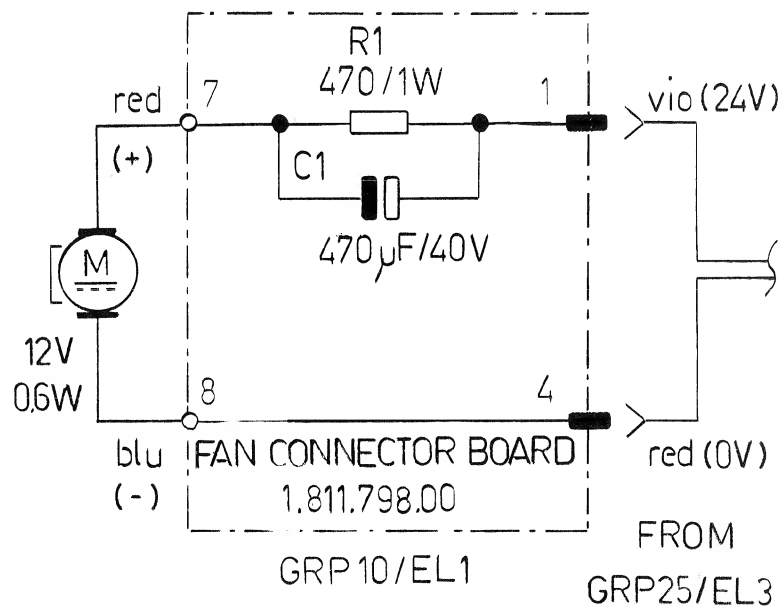
DRA 86/01/13

STUDER (00) 45/01/13 LN POWER SUPPLY CONNECTION BOARD PL 1.811.770-00 PAGE 1 STUDER (00) 45/01/13 LN POWER SUPPLY CONNECTION BOARD PL 1.811.770-00 PAGE 2

Fan Connector Board 1.811.799.00

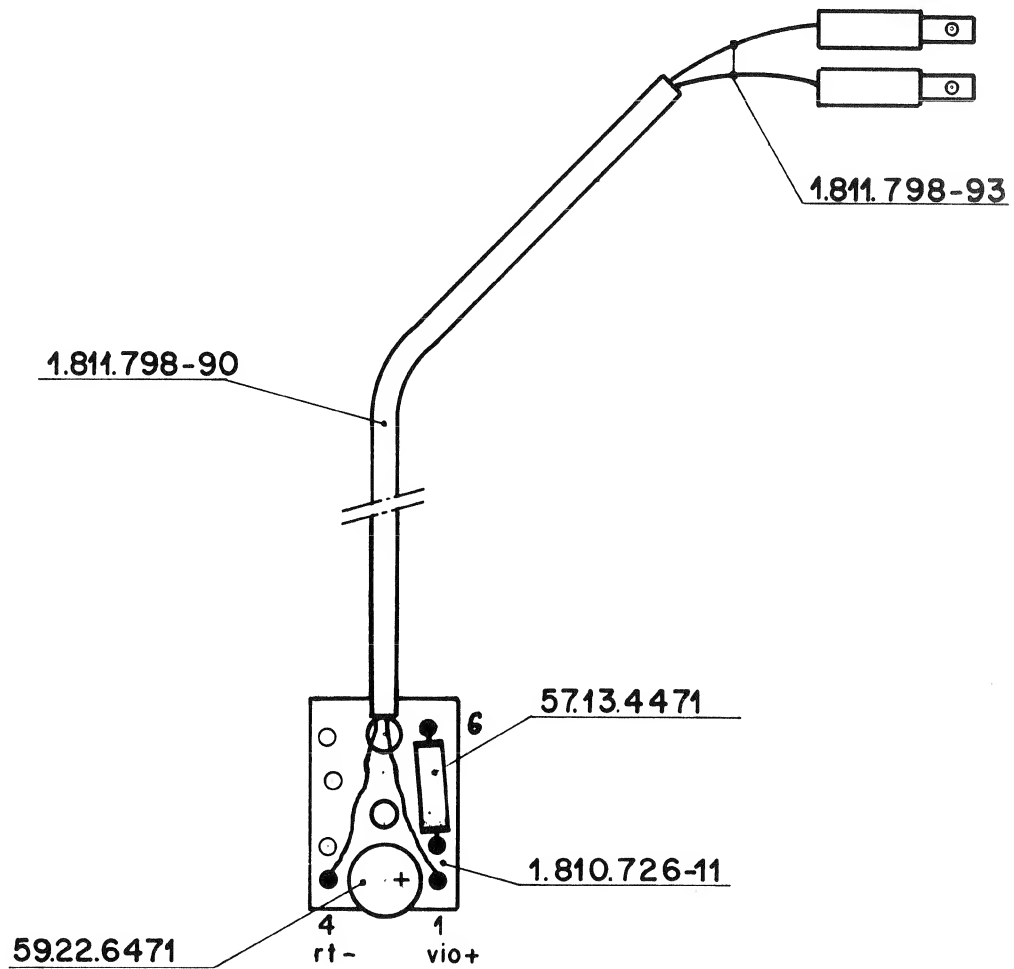


Fan Connector Board 1.811.798.00



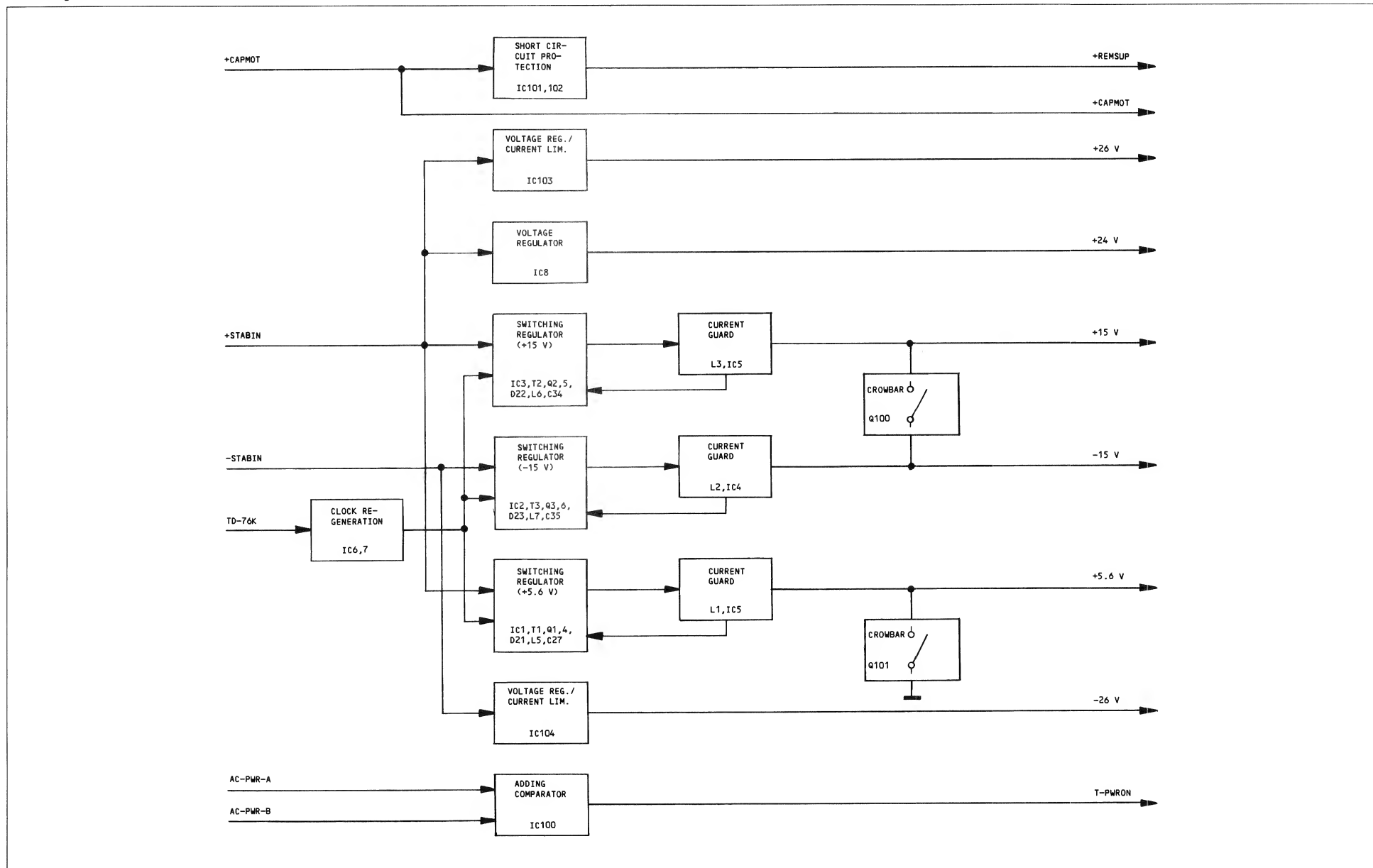
★ MODIFICATION .83

Fan Connector Board 1.811.798.00

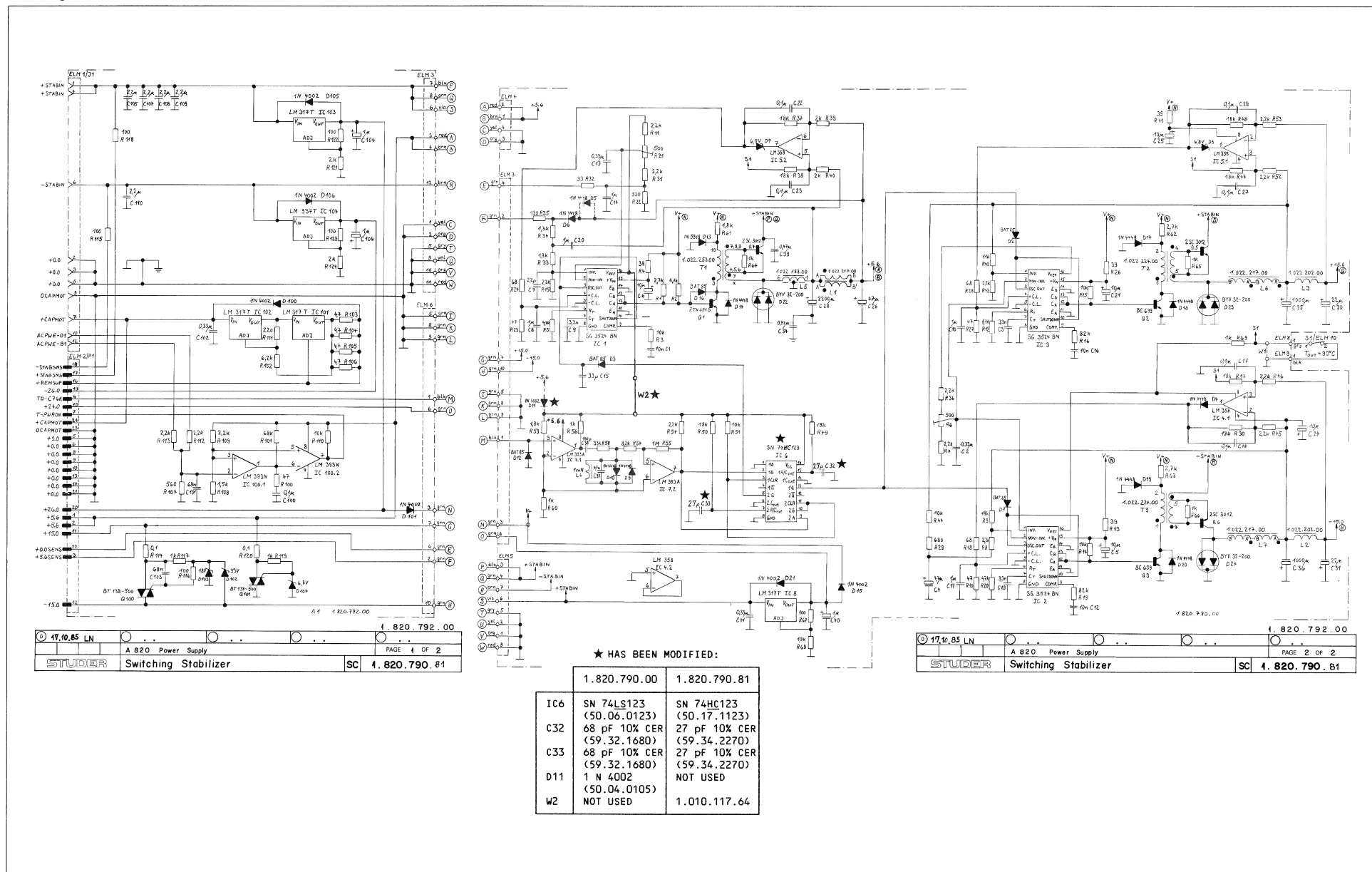


Block Diagram Switching Stabilizer PCB 1.820.790

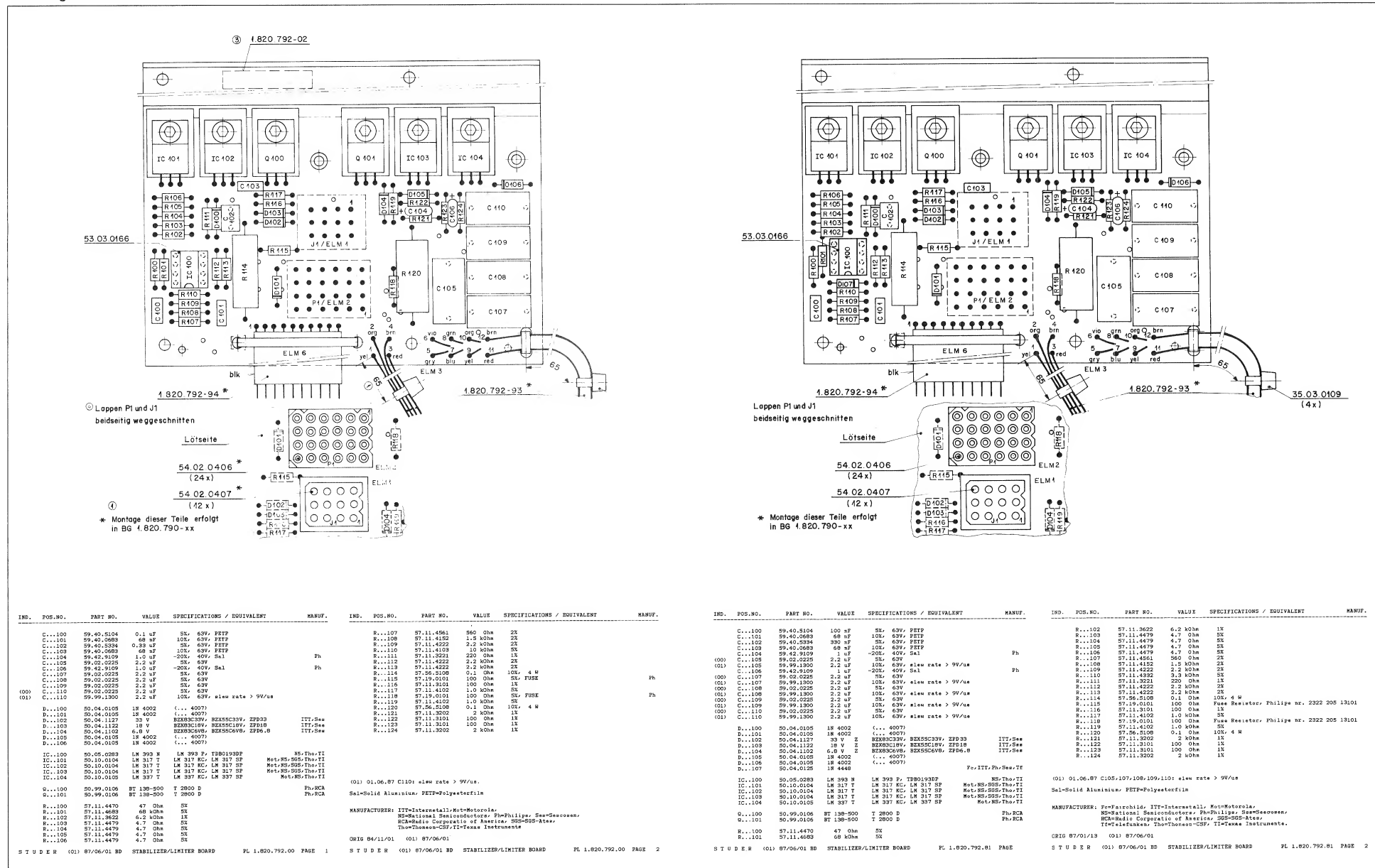
Block Diagram Stabilizer/Limiter PCB 1.820.792



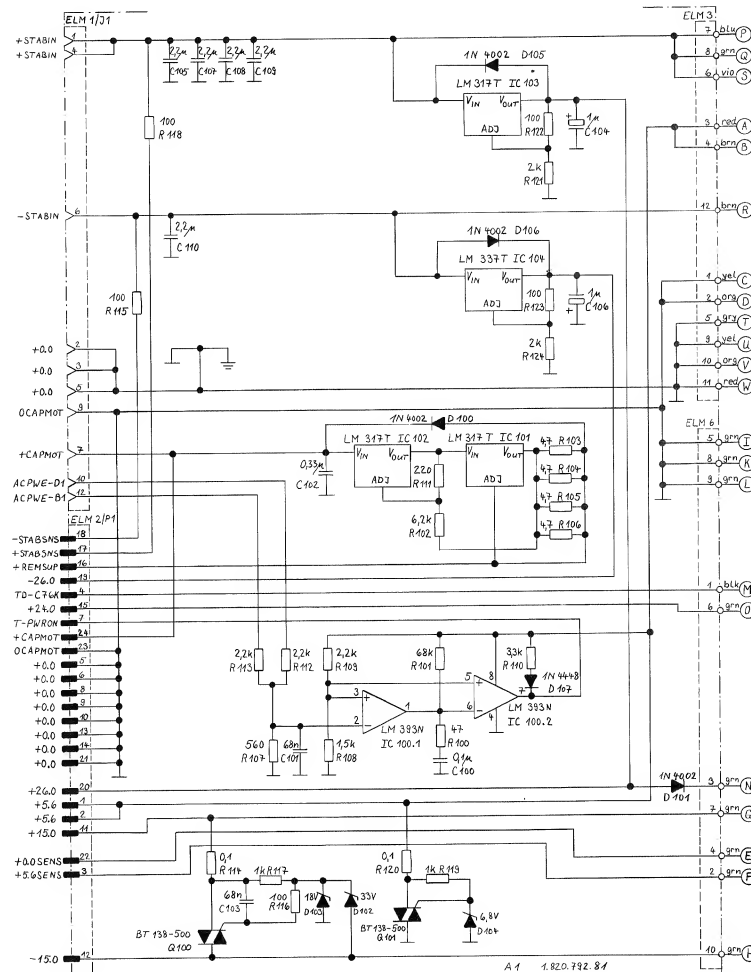
Switching Stabilizer 1.820.790.81



Switching Stabilizer 1.820.790.81

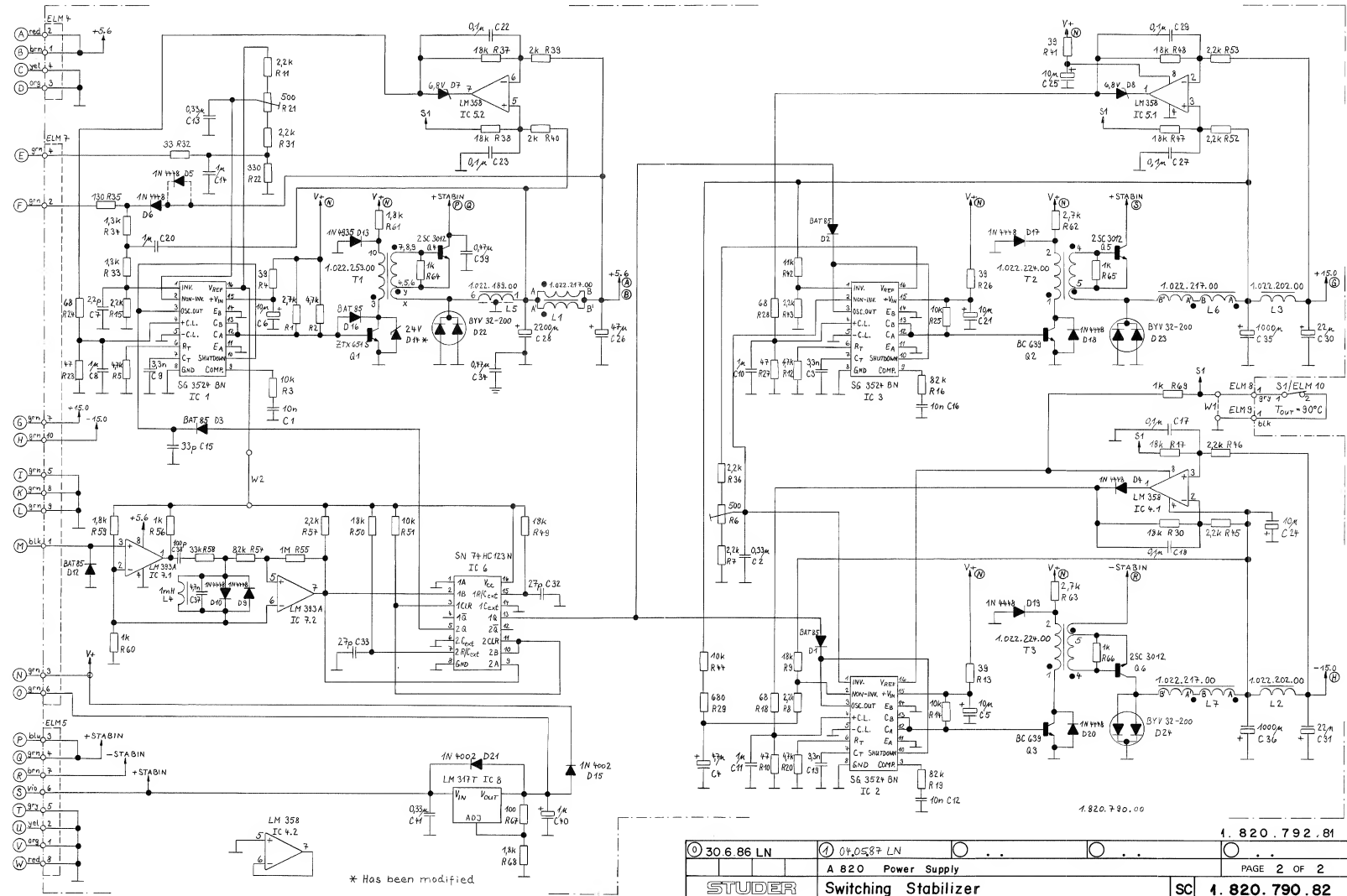


Switching Stabilizer 1.820.790.82



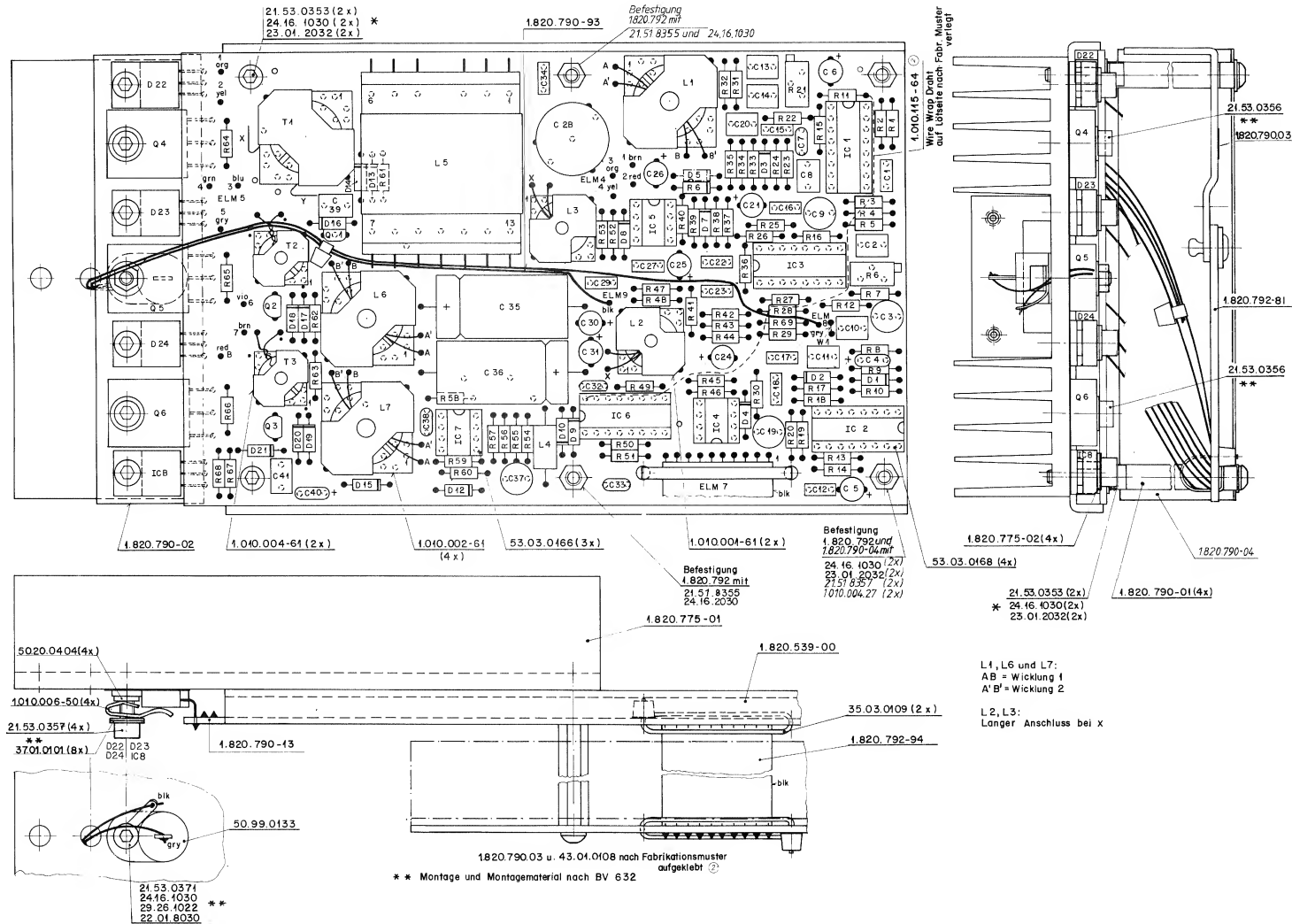
30.6.86 LN	0405.87 LN			1.820.792.81
	A 820 Power Supply			PAGE 1 OF 2
STUDER	Switching Stabilizer	SC	1.820.790.82	

Switching Stabilizer 1.820.790.82

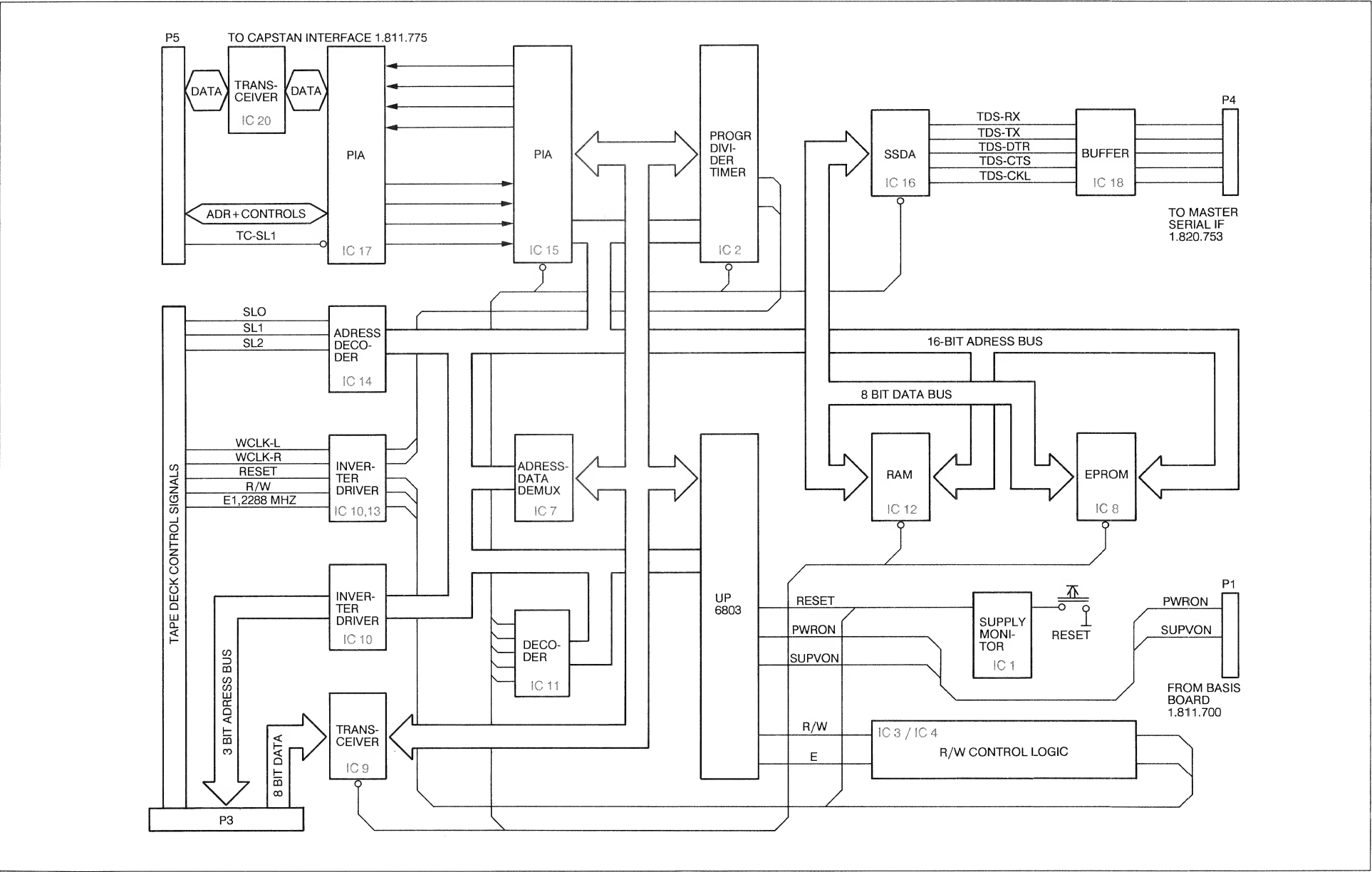


30.6.86 LN	04.05.87 LN		
A 820 Power Supply			PAGE 2 OF 2
STUDER	Switching Stabilizer	SC	1.820.790.82

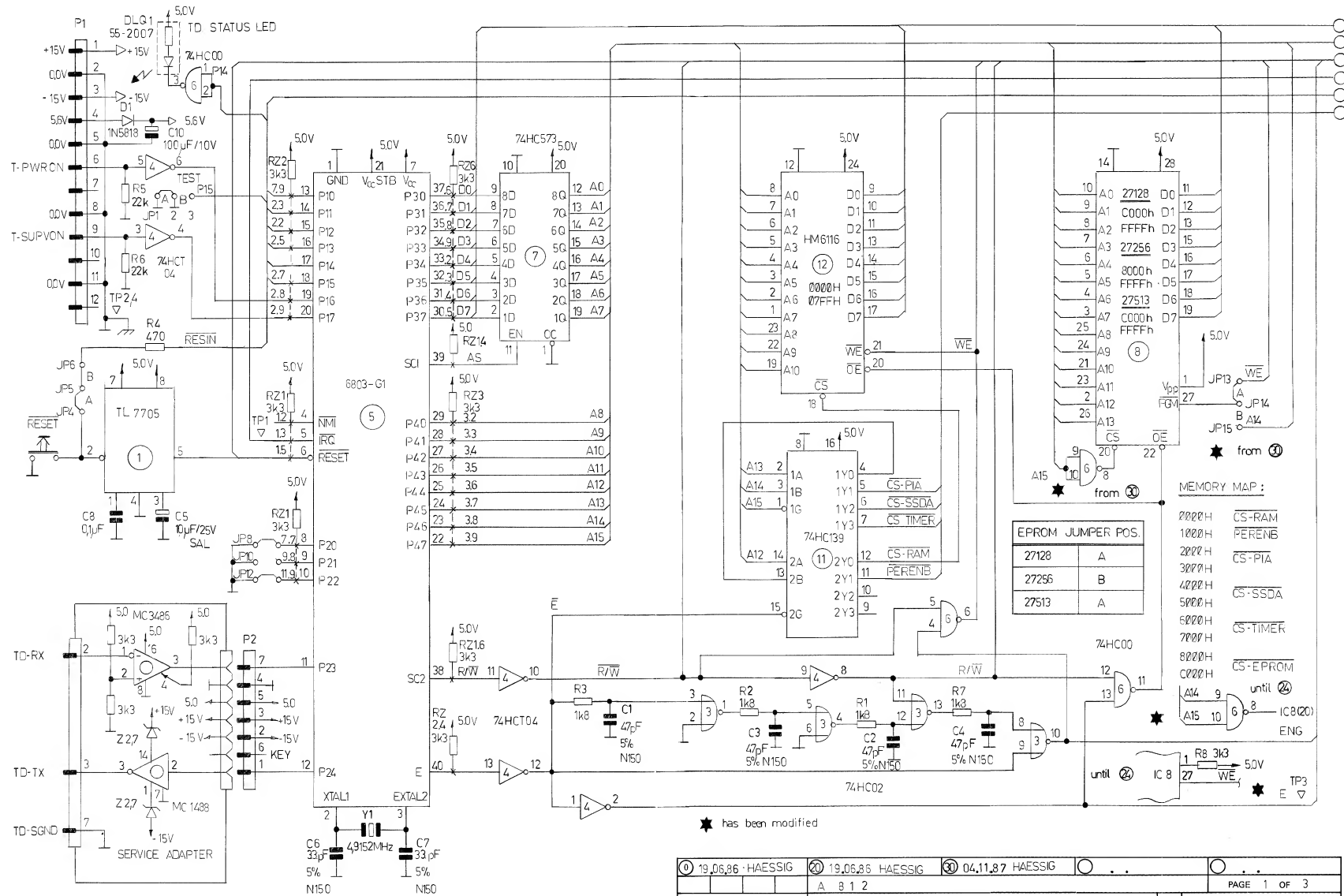
Switching Stabilizer 1.820.790.82



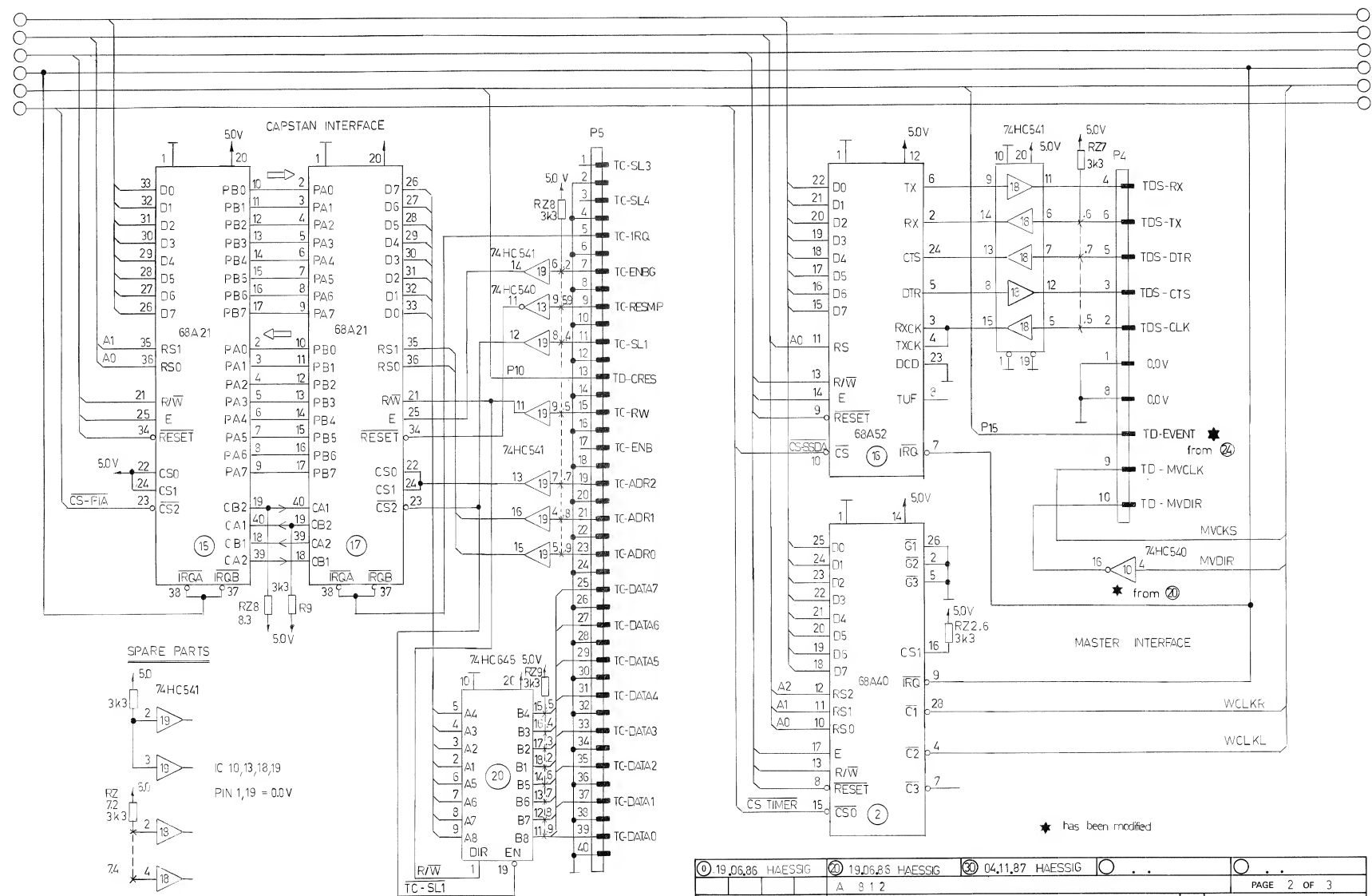
Block Diagram Tape Deck Controller 1.811.774



Tape Deck Controller ESE 1.811.774.20

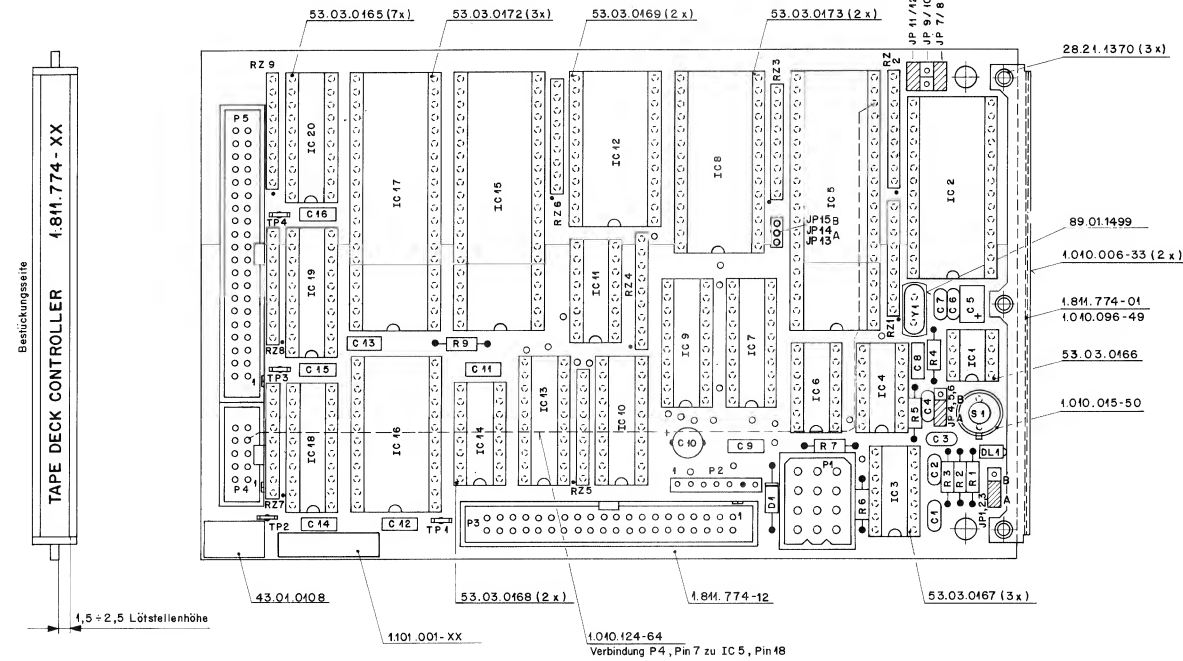


Tape Deck Controller ESE 1.811.774.20




① 19,06,86 HAESSIG	② 19,06,86 HAESSIG	③ 04,11,87 HAESSIG	④ . . .	⑤ . . .
A 3 1 2				PAGE 2 OF 3
STUDER	TAPE DECK CONTROLLER	ESE	SC	1.811.774.20







③⑩ Jumper Position JP13,JP14,JP15:

JP15
JP14
JP13



Eprom 27256 (32k x 8) 50.14.0153
Position B

JP15  Eprom 27128 (16k x 8) 50.14.0125
JP14  Eprom 27513 (4x16k x 8) 50.14.2001
JP13 Position A

INO.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	C-1	59-34-2470	47 PF	5%, Cc	
(20)	C-2	59-34-2470	47 PF	5%, Cc	
(20)	C-3	59-34-2470	47 PF	5%, Cc	
(20)	C-4	59-34-2470	47 PF	5%, Cc	
(20)	C-5	59-29-2121	10 MF	20%, Cc	
(20)	C-6	59-34-2390	39 PF	5%, Cc	
(20)	C-7	59-06-0104	100 PF	10%, PETP	
(20)	C-8	59-06-0683	56 MF	10%, PETP	
(20)	C-9	100-22-3101	100 PF	20%, 10V, CI	
(20)	C-11	59-06-0683	56 MF	10%, PETP	
(20)	C-12	59-06-0683	56 MF	10%, PETP	
(20)	C-13	59-06-0683	56 MF	10%, PETP	
(20)	C-14	59-06-0683	56 MF	10%, PETP	
(20)	C-15	59-06-0683	56 MF	10%, PETP	
(20)	C-16	59-06-0683	56 MF	10%, PETP	

[illegible]

STUDER (30) 89/02/01 80 TAPE DECK CONTROLLER PL 1.811.774.00 PAGE :

IND.	PDS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(30)	C.....1	59.34.2470	47 pf	55, Cx	
(31)	C.....2	59.34.2470	47 pf	55, Cx	
(32)	C.....3	59.34.2470	47 pf	55, Cx	
(33)	C.....4	59.34.2470	47 pf	55, Cx	
(34)	C.....5	59.28.1200	10 pf	205, SA	
(35)	C.....6	59.34.2530	38 pf	55, Cx	
(36)	C.....7	59.34.2390	33 pf	55, Cx	
(37)	C.....8	59.09.0114	100 pf	105, PEP	
(38)	C.....9	59.05.0693	68 pf	105, PEP	
(39)	C.....10	59.12.3101	120 pf	105, 10V, PEP	
(40)	C.....11	59.06.0933	88 pf	105, PEP	
(41)	C.....12	59.06.0933	88 pf	105, PEP	
(42)	C.....13	59.06.0933	88 pf	105, PEP	
(43)	C.....14	59.06.0933	88 pf	105, PEP	
(44)	C.....15	59.06.0933	88 pf	105, PEP	
(45)	C.....16	59.06.0933	68 pf	105, PEP	

(30)	D.....1	90.04.05.12	LN 5818	LN 5819	Met
(30)	EL.....1	90.04.21.07	55S-2007		Oi
(80)	IC.....1	90.11.10.12	TL7705ACIP		T1
(80)	IC.....2	90.11.10.12	TL7705ACIP	HB884407	Met,Nb,Ni,Ti
(80)	IC.....3	90.11.10.12	TL7705ACIP	74 HC 02	Met,Nb,Ni,Ti
(80)	IC.....4	90.11.10.12	TL7705ACIP	74 HC 02	Met,Nb,Ni,Ti
(80)	IC.....5	90.16.10.17	HB8839-1	Met,Nb,Ni,Ti,Pb,SCA,Si,Ti	Met
(80)	IC.....6	90.16.10.17	HB8839-1	74 HC 02	Met,Nb,Ni,Ti
(80)	IC.....7	90.11.15.73	74 HC 573	74 HC 573	Met,Nb,Ni,Ti
(80)	IC.....8	90.11.15.73	74 HC 573	74 HC 573	Met,Nb,Ni,Ti
(80)	IC.....9	90.11.15.84	74 HC 645	74 HC 645	Met,Nb,Ni,Ti,Pb,SCA,Si,Ti
(80)	IC.....10	90.11.15.84	74 HC 645	74 HC 645	Met,Nb,Ni,Ti
(80)	IC.....11	90.11.13.39	74 HC 139	74 HC 139	Met,Nb,Ni,Ti
(80)	IC.....12	90.11.01.07	74 HC 107	74 HC 107	Met,Nb,Ni,Ti
(80)	IC.....13	90.11.15.40	74 HC 1540	74 HC 1540	Met,Nb,Ni,Ti
(80)	IC.....14	90.11.15.40	74 HC 1540	74 HC 1540	Met,Nb,Ni,Ti
(80)	IC.....15	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....16	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....17	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....18	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....19	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....20	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....21	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....22	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....23	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....24	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....25	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....26	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....27	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....28	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....29	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....30	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....31	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....32	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....33	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....34	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....35	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....36	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....37	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....38	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....39	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....40	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....41	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....42	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....43	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....44	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....45	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....46	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....47	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....48	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....49	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....50	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....51	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....52	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....53	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....54	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....55	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....56	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....57	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....58	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
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(80)	IC.....69	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
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(80)	IC.....73	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
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(80)	IC.....75	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....76	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....77	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....78	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
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(80)	IC.....83	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....84	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....85	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....86	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....87	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....88	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....89	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....90	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....91	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....92	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....93	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....94	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....95	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....96	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....97	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....98	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....99	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti
(80)	IC.....100	90.16.10.08	HB8842-1	HB8842-1	Met,Nb,Ni,Ti

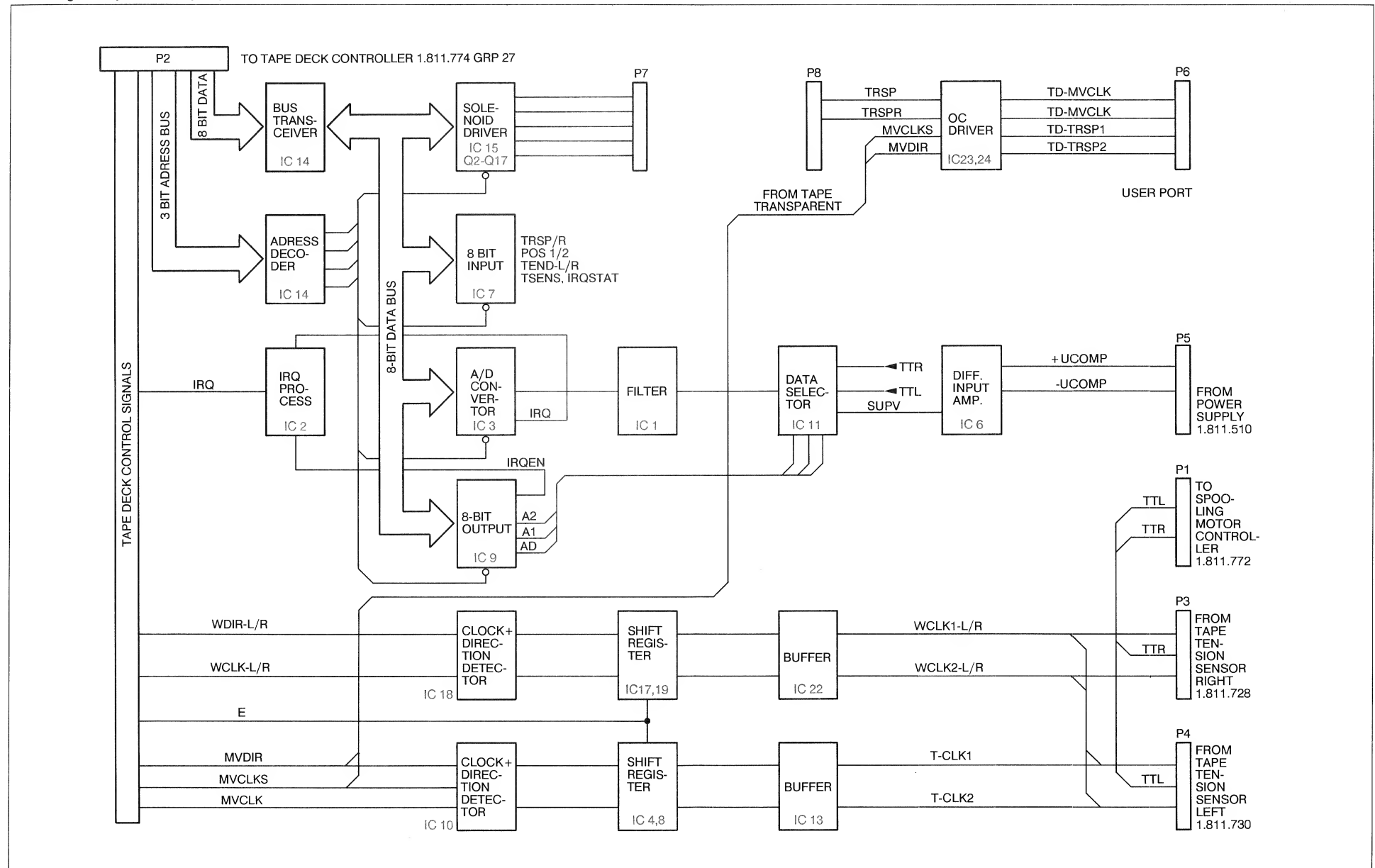
STUDER (30) 07/11/04 00 TAPE DECK CONTROLLER PL 1.811.774.00 PAGE 1

IND.	PGS.IND.	PART	NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(C00)	IC-17	NO	18.01.0008	74 HC 645	BSBASIC, FBSBASIC	AMI, T.Y., Mc I.
(C00)	IC-18	NO	50.17.1541	74 HC 641	74 HC 641	
(C00)	IC-19	NO	50.17.1541	74 HC 641	74 HC 641	
(C00)	IC-20	NO	50.17.1648	74 HC 645	74 HC 645	Not, NS, PH, PCA, SSG, T, Te
(C00)	JP-1	54.01.0020			*** note Z	
(C00)	JP-2	54.01.0020			*** note Z	
(C00)	JP-3	54.01.0020			*** note Z	
(C00)	JP-4	54.01.0020			*** note Z	
(C00)	JP-5	54.01.0020			*** note Z	
(C00)	JP-6	54.01.0020			*** note Z	
(C00)	JP-7	54.01.0020			*** note Z	
(C00)	JP-8	54.01.0020			*** note Z	
(C00)	JP-9	54.01.0020			*** note Z	
(C00)	JP-10	54.01.0020			*** note Z	
(C00)	JP-11	54.01.0020			*** note Z	
(C00)	JP-12	54.01.0020			*** note Z	

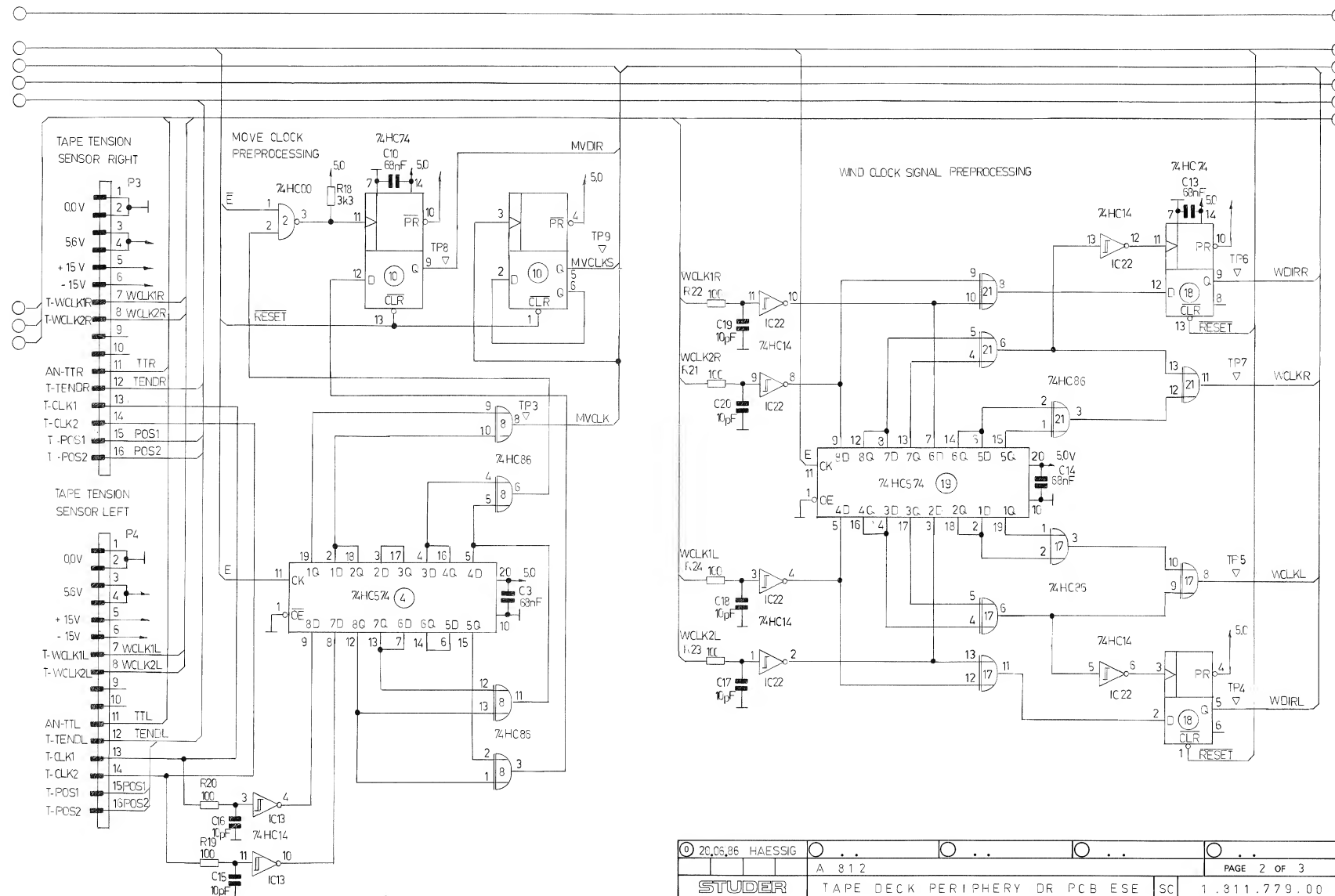
(Z0)	P.....		12 cent.	see note 3
(Z1)	P.....		7 pieces	see note 4
(Z2)	P.....	54.01.0020	40 cent.	see note 5
(Z3)	P.....	54.14.0004	1.00 \$	see note 5
(Z4)	P.....	54.14.0004	1.00 \$	see note 5
(Z5)	P.....	54.14.0004	1.00 \$	see note 5
(Z6)	R.....	57.11.4182	1.6 kWh	2X
(Z7)	R.....	57.11.4182	1.9 kWh	2X
(Z8)	R.....	57.11.4182	1.9 kWh	2X
(Z9)	R.....	57.11.4471	2.70 kWh	2X
(Z10)	R.....	57.11.4223	2.2 kWh	2X
(Z11)	R.....	57.11.4223	2.2 kWh	2X
(Z12)	R.....	57.11.4182	1.9 kWh	2X
(Z13)	R.....	57.11.4382	1.9 kWh	2X
(Z14)	R.....	57.11.4382	3.3 kWh	2X
(Z15)	R.....	57.11.4382	3.3 kWh	2X
(Z16)	R2.....	57.08.4332		Network 8 = 3.3 kWh, 0X, see note 7
(Z17)	R2.....	57.08.4332		Network 8 = 3.3 kWh, 0X, see note 7
(Z18)	R2.....	57.08.4332		Network 8 = 3.3 kWh, 0X, see note 7

STUDER (30) 89/02/01 BD TAPE DECK CONTROLLER PL 1.811.774.00 PAGE 2

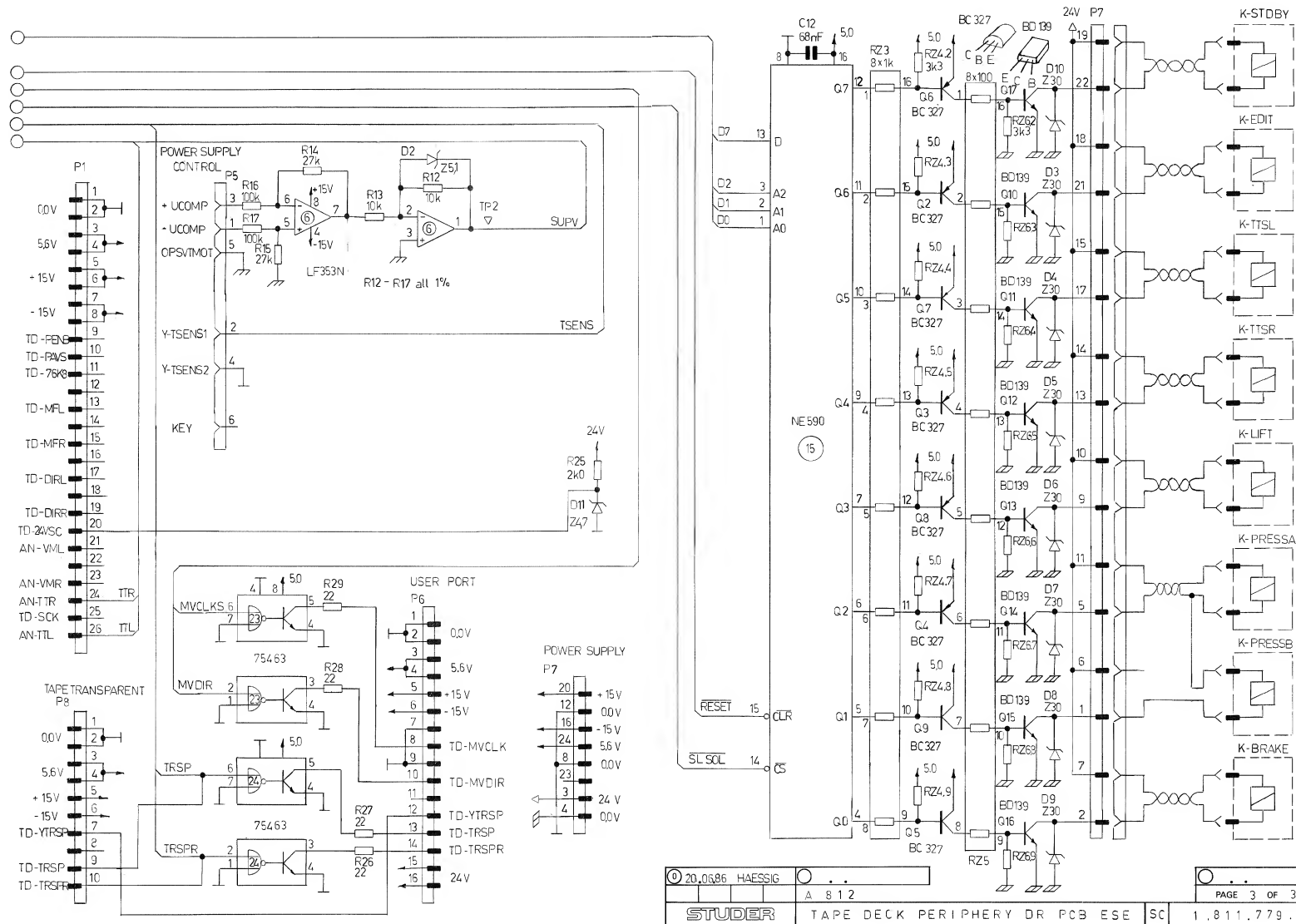
Block Diagram Tape Deck Periphery Driver 1.811.779



Tape Deck Periphery DR PCB ESE 1.811.779.00

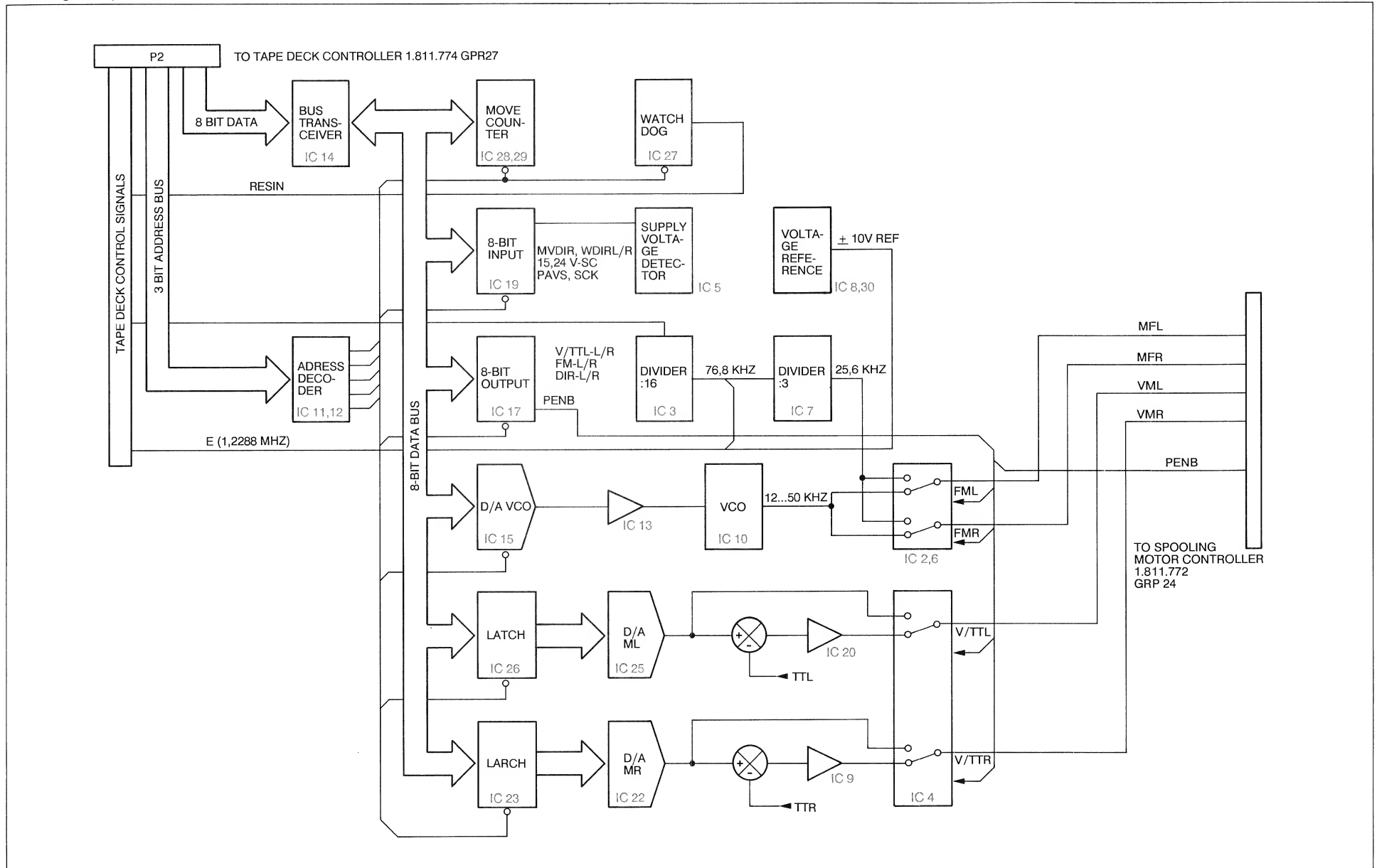


Tape Deck Periphery DR PCB ESE 1.811.779.00

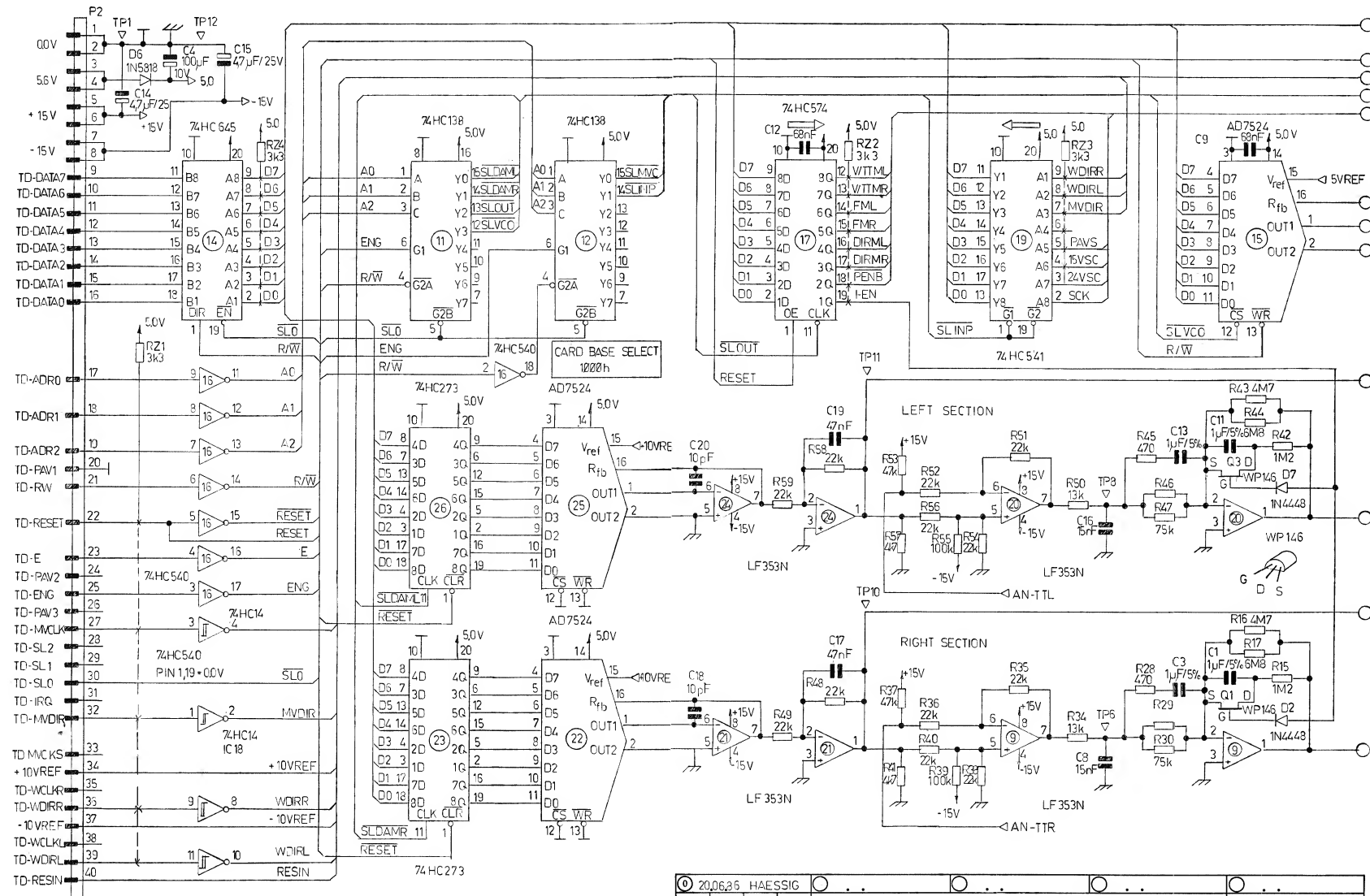




Block Diagram Tape Deck Periphery Control 1.811.773

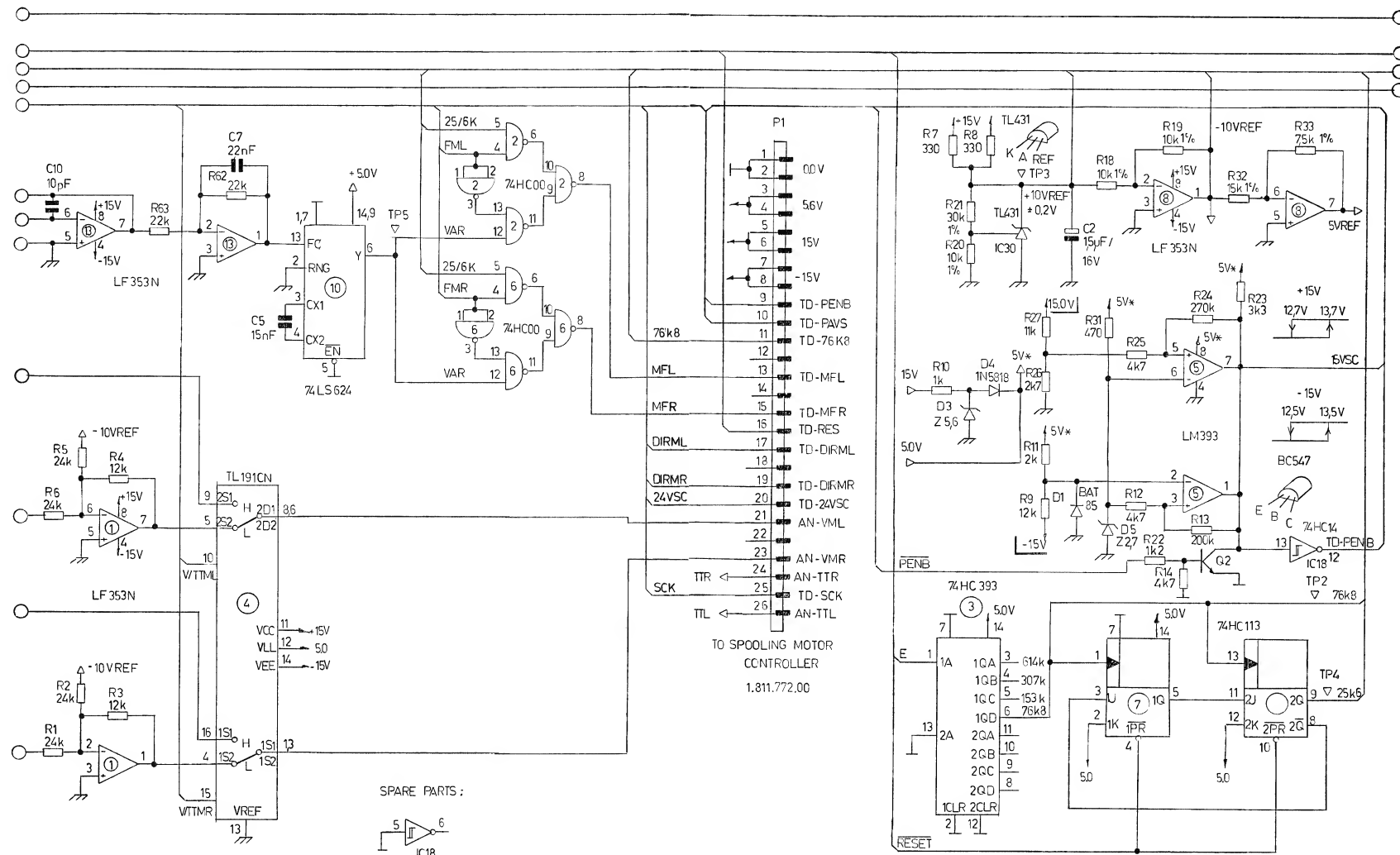


Tape Deck Periphery IF ESE 1.811.773.00

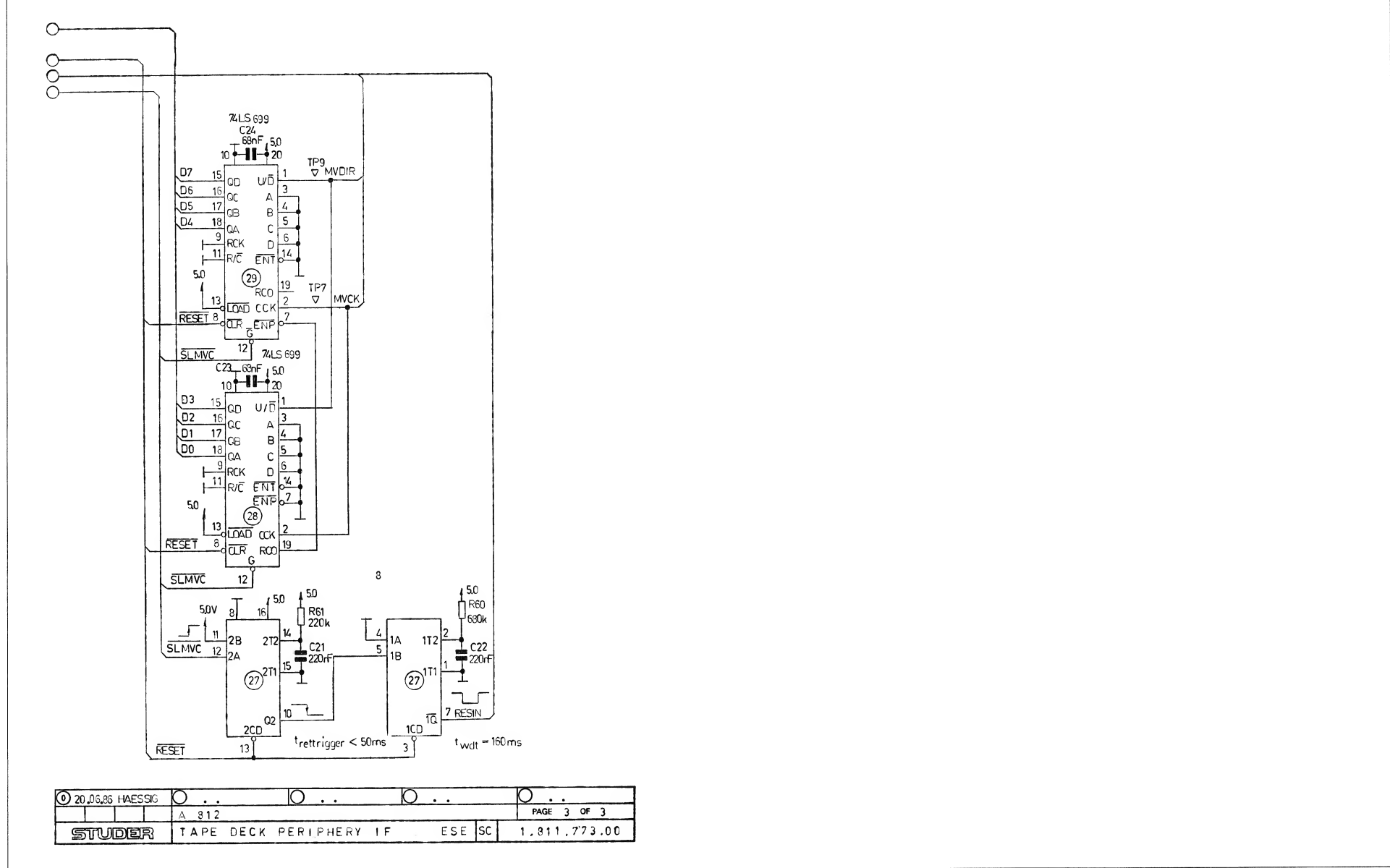


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STUDER	TAPE DECK PERIPHERY IF ESE SC	1.811.773.00

Tape Deck Periphery IF ESE 1.811.773.00

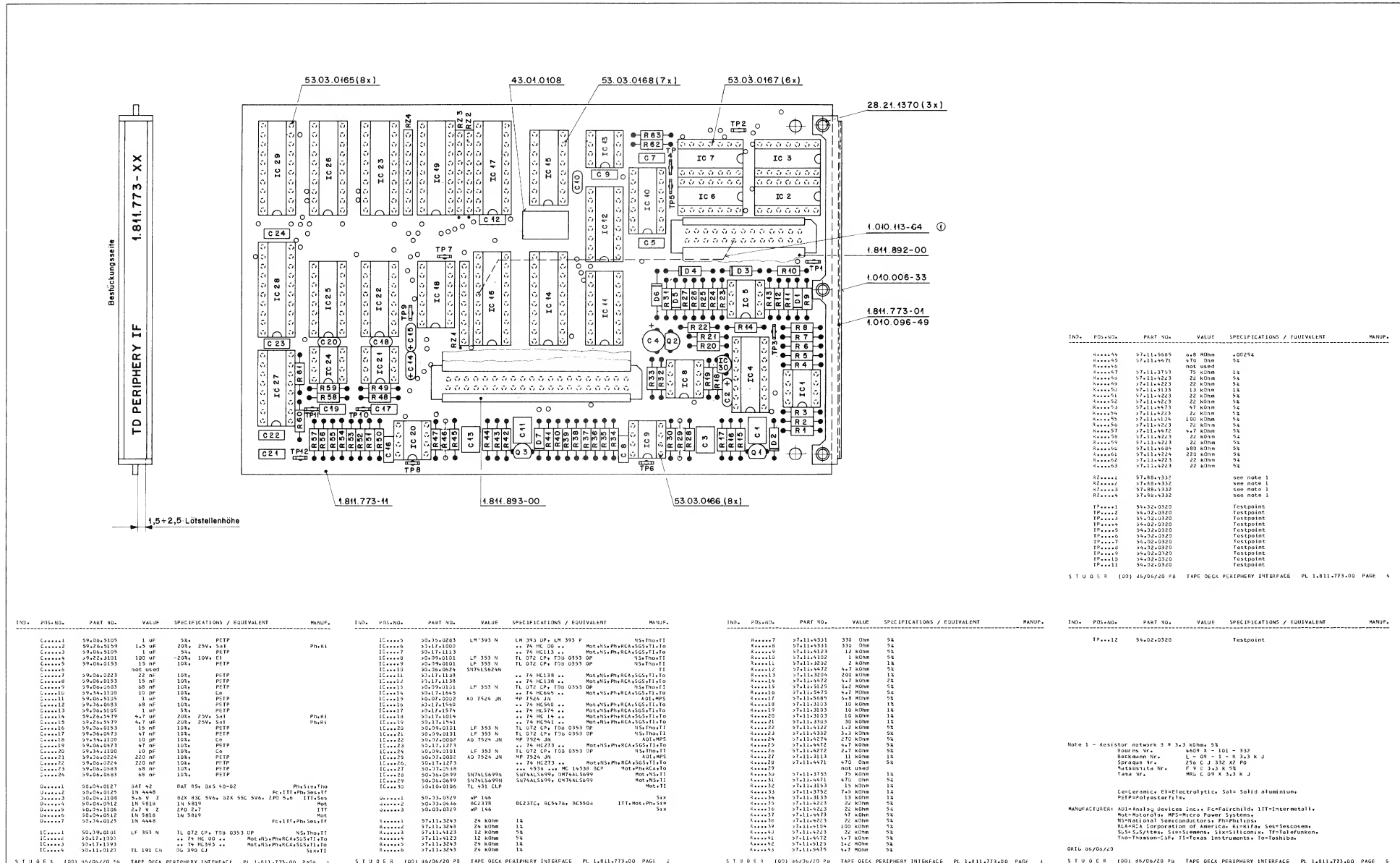


20.06.86 HAESSIG	A 812	PAGE 2 OF 3
STUDER	TAPE DECK PERIPHERY IF ESE SC	1 811 773 00

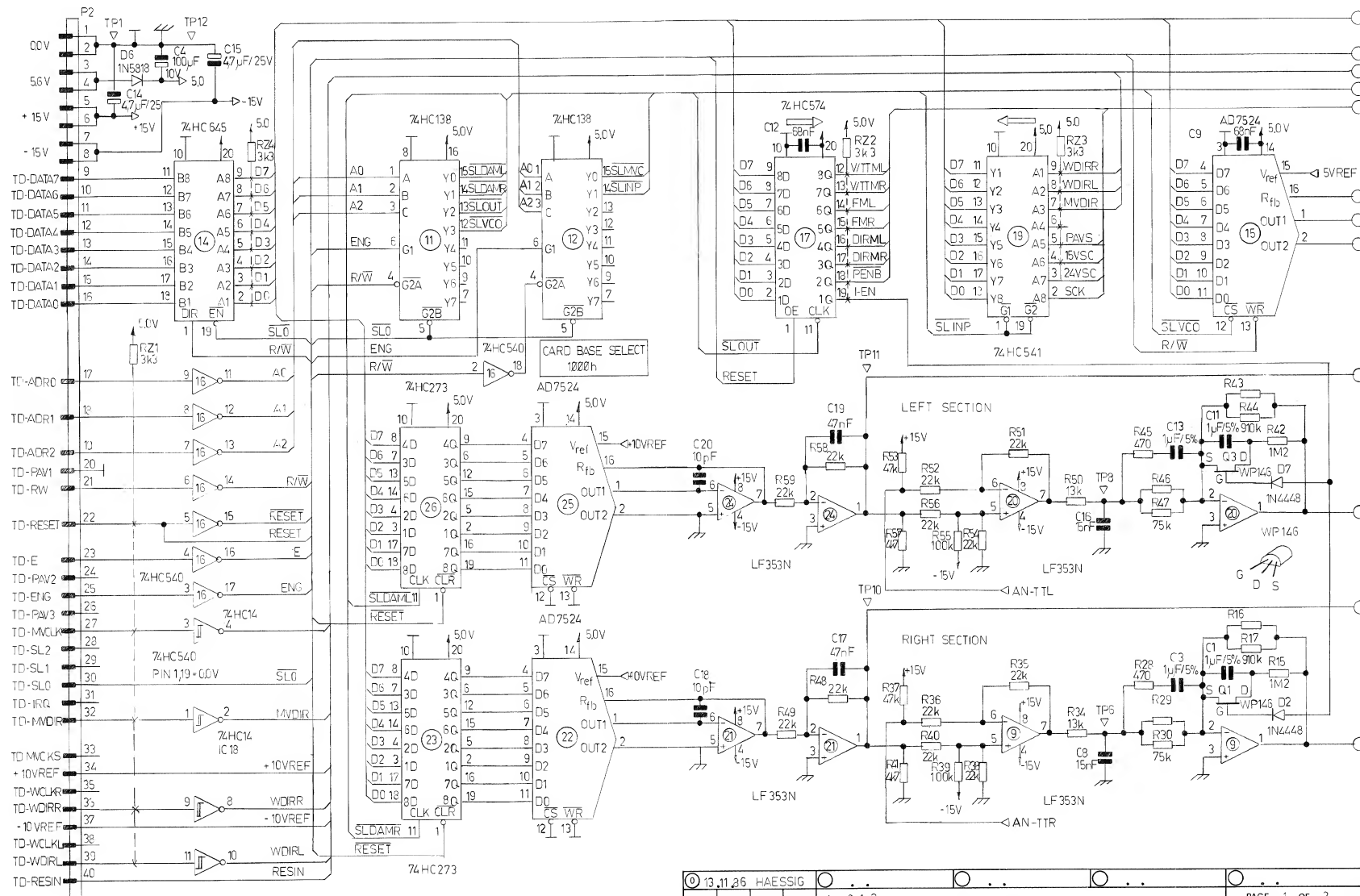
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STUDER		TAPE DECK PERIPHERY IF ESE SC			1,811,773.00	

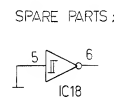
Tape Deck Periphery IF ESE 1.811.773.00



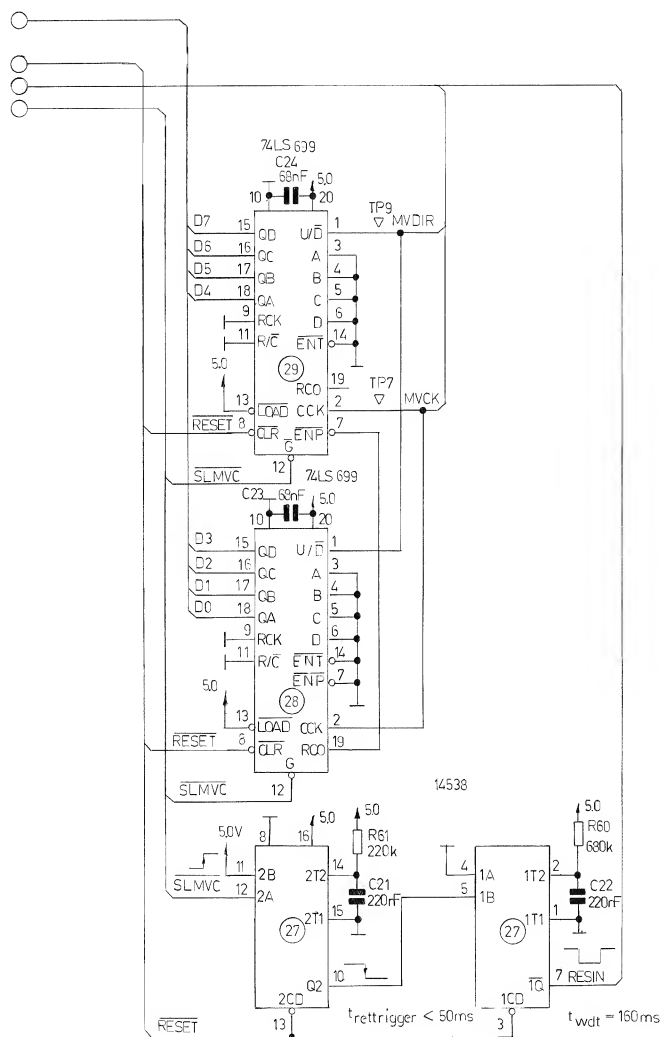
Tape Deck Periphery IF ESE 1.811.773.81



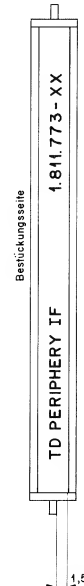
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STUDER	TAPE DECK PERIPHERY IF ESE SC	1.811.773.81

[illegible]

Tape Deck Periphery IF ESE 1.811.773.81



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A 812				PAGE 3 OF 3
STUDER	TAPE DECK PERIPHERY IF	ESE	SC	1.811.773.81

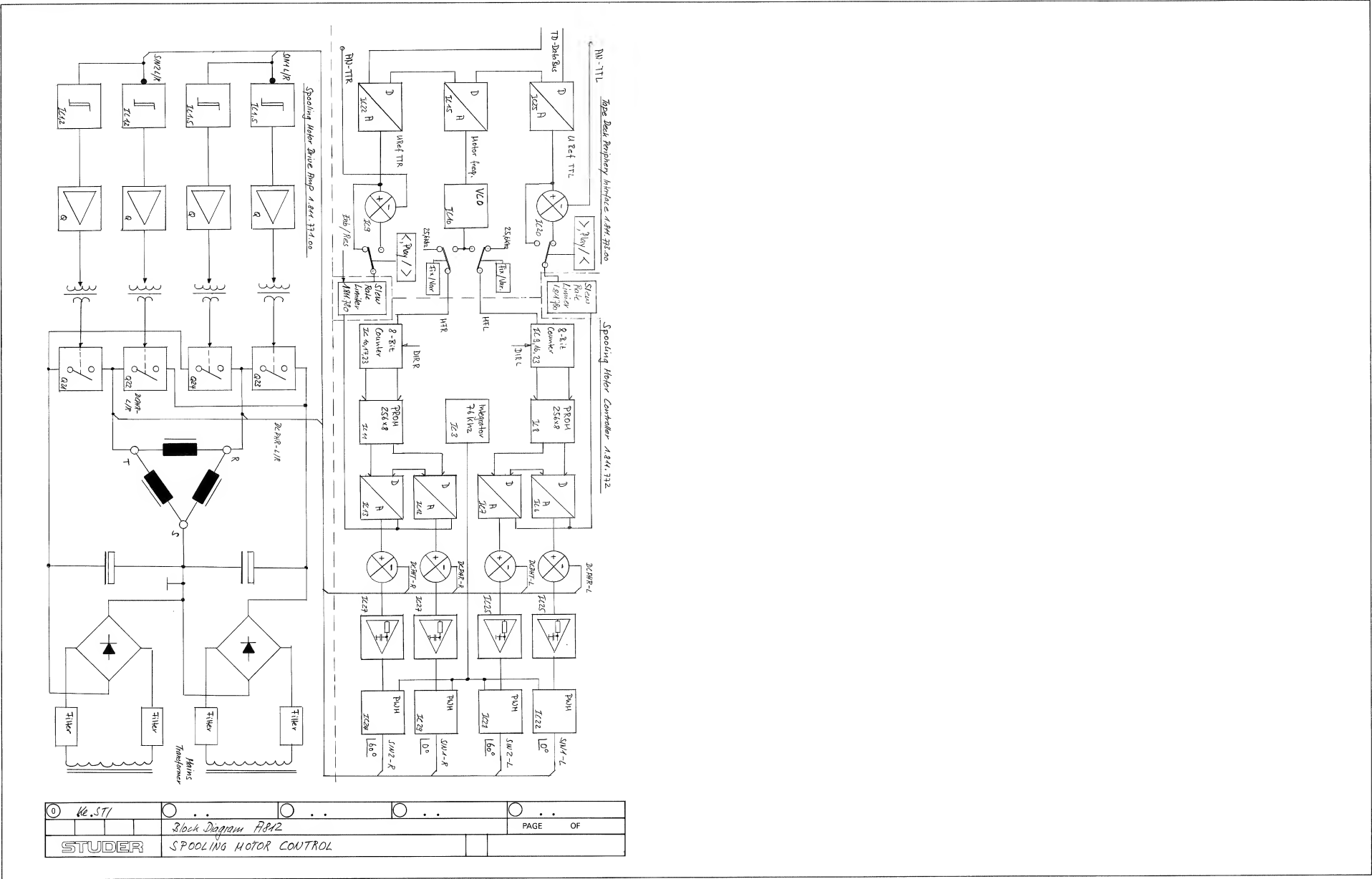
S T U D E R (00) 86/11/13 BD TAPE DECK PERIPHERY INTERFACE PL 1.811.773.81 PAGE 4S T U O E R (00) 65/11/13 BU TAPE DECK PERIPHERY INTERFACE PL 1.811.773.81 PAGE 1

S T U D E R (00) 06/11/13 BD TAPE DECK PERIPHERY INTERFACE PL 1.011.773.01 PAGE 2

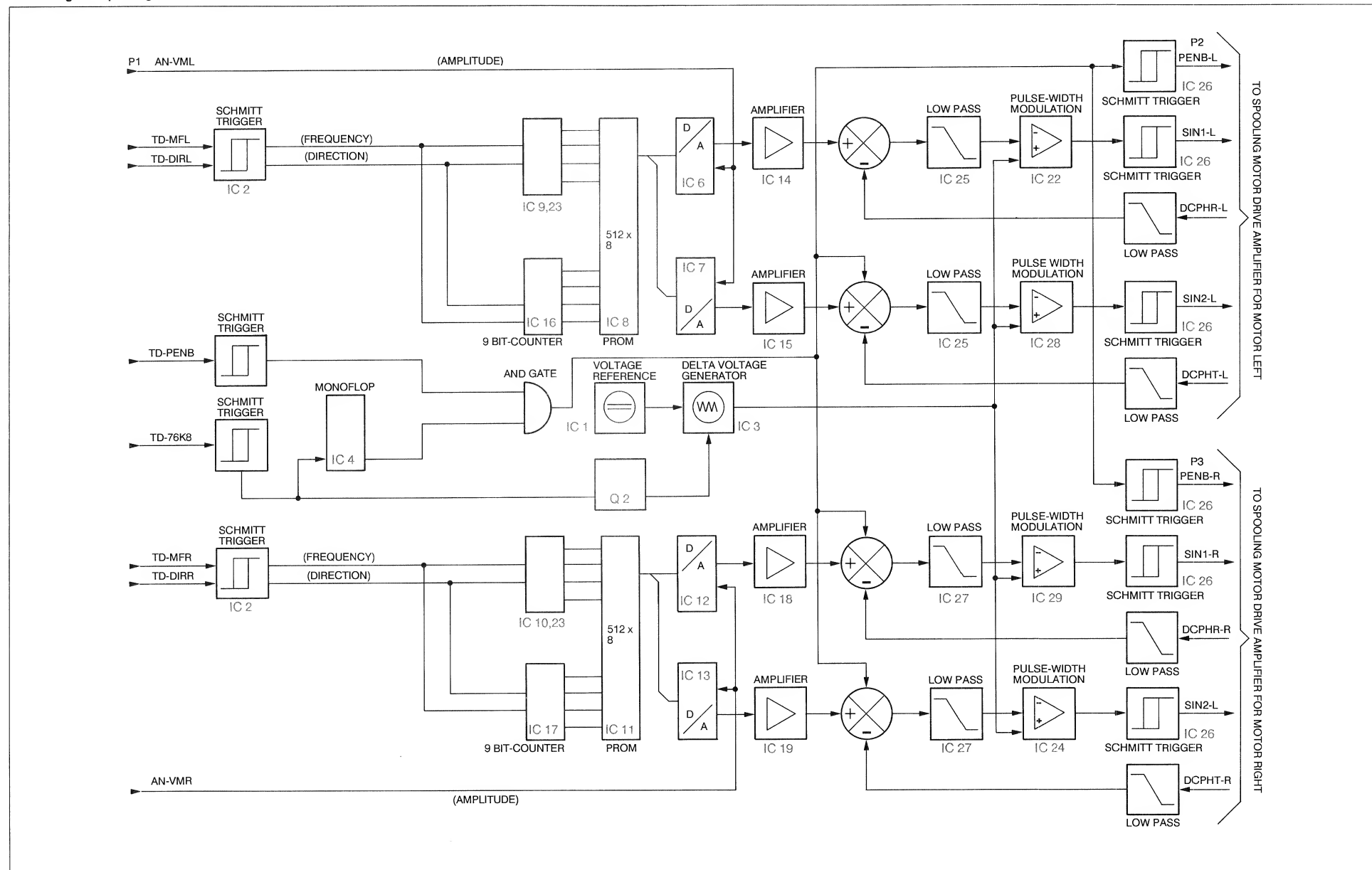
S T U O E R (00) 86/11/13 80 TAPE DECK PERIPHERY INTERFACE PL 1.011.773.01 PAGE

S T U D E R (00) 06/11/13 80 TAPE DECK PERIPHERY INTERFACE PL 1.811.773.81 PAGE 5

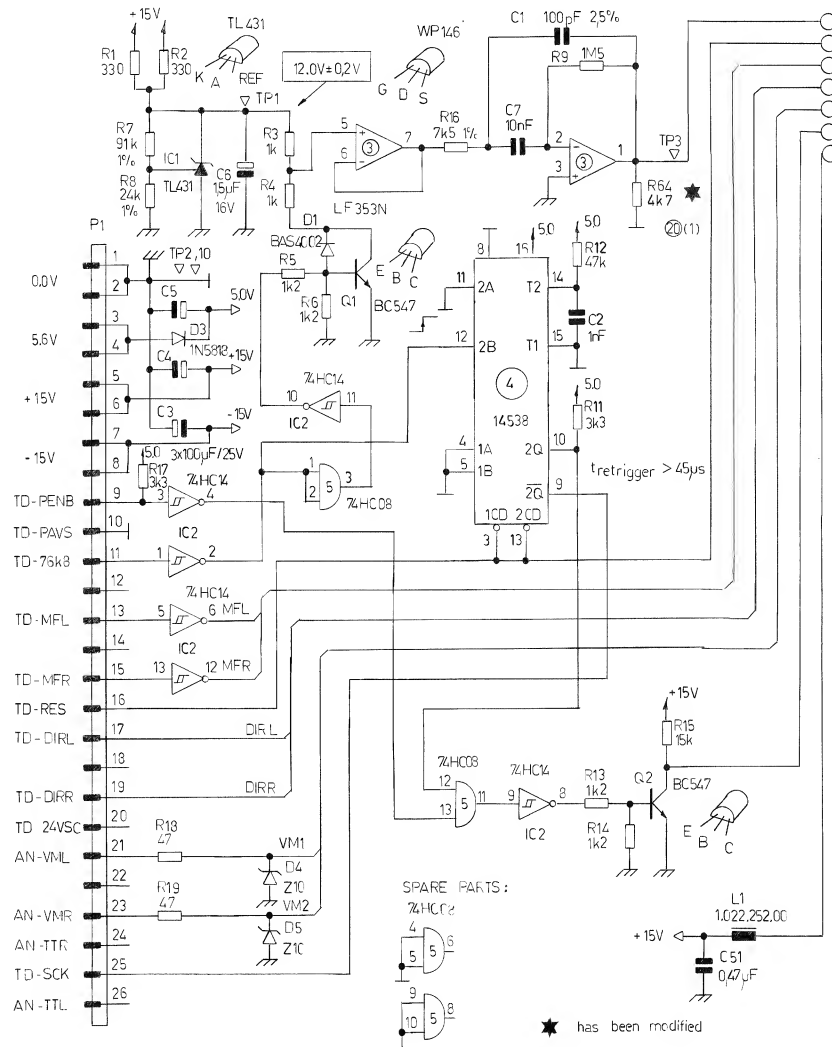
Spooling Motor Control



Block Diagram Spooling Motor Controller 1.811.772.20

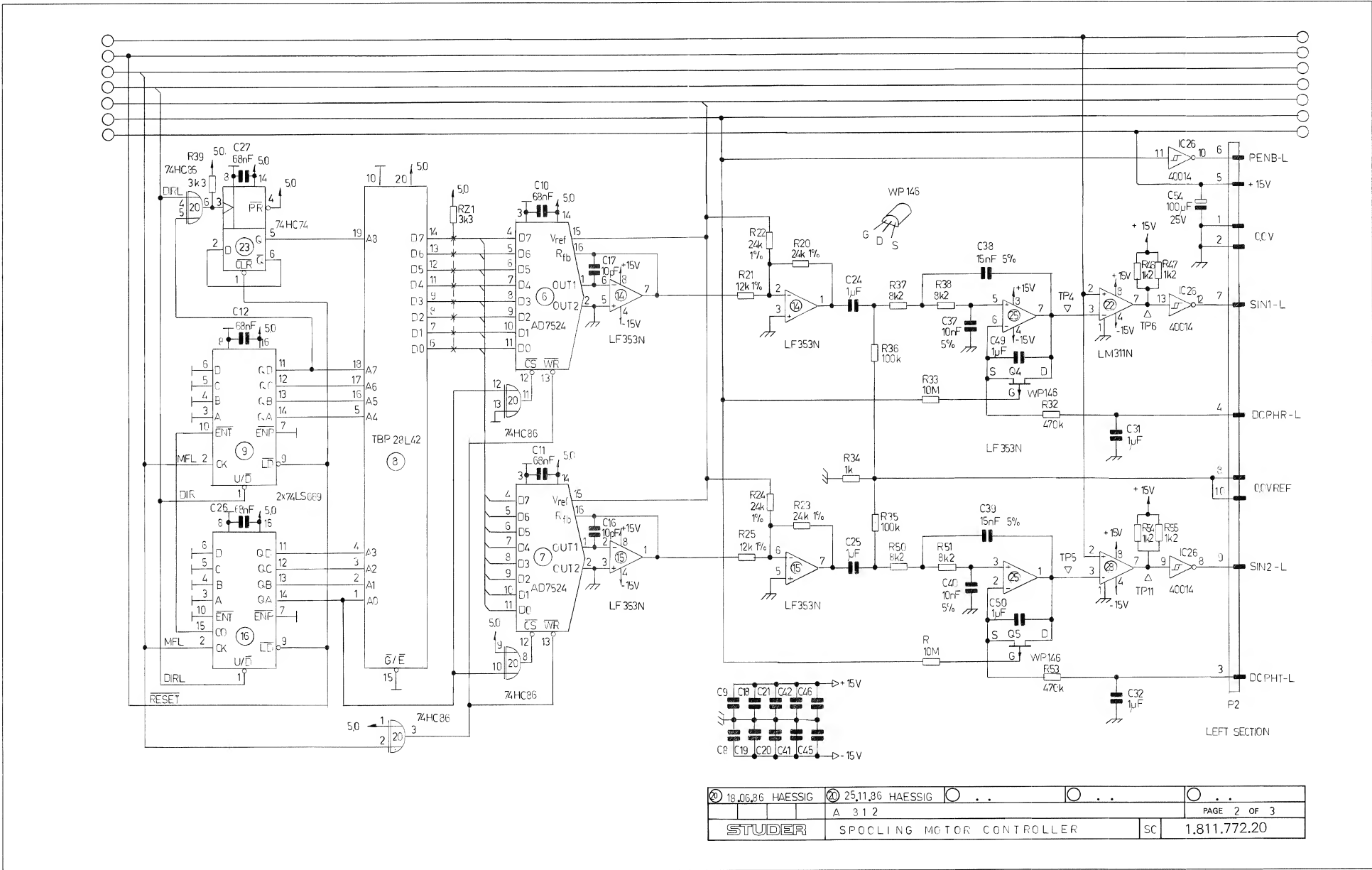


Spooling Motor Controller 1.811.772.20

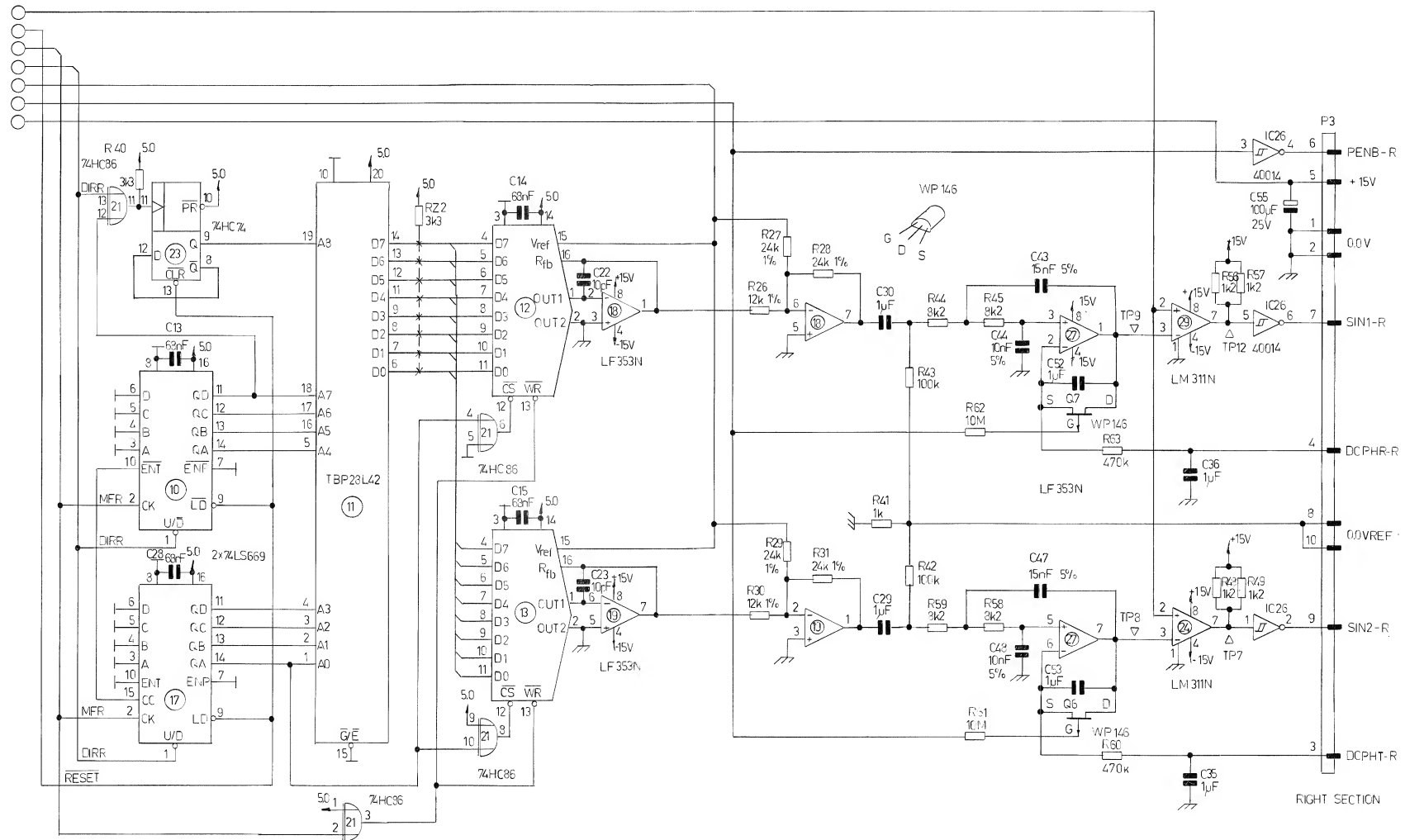


② 18,06,86 HAESSIG	② 25,11,86 HAESSIG	○ . .	○ . .	○ . .
	A 312			PAGE 1 OF 3
STUDER	SPOOLING MOTOR CONTROLLER	SC	1,811,772.20	

Spooling Motor Controller 1.811.772.20

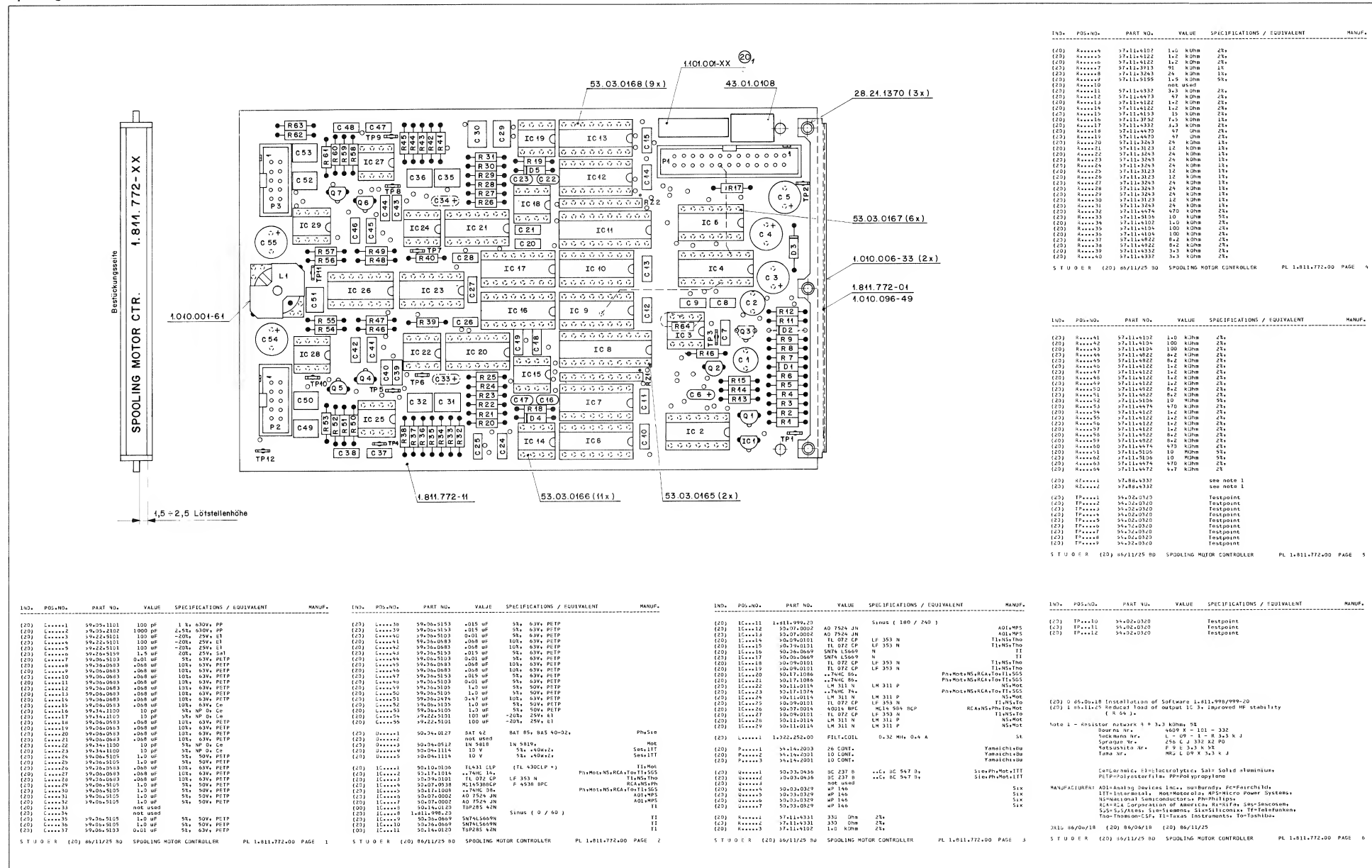


Spooling Motor Controller 1.811.772.20

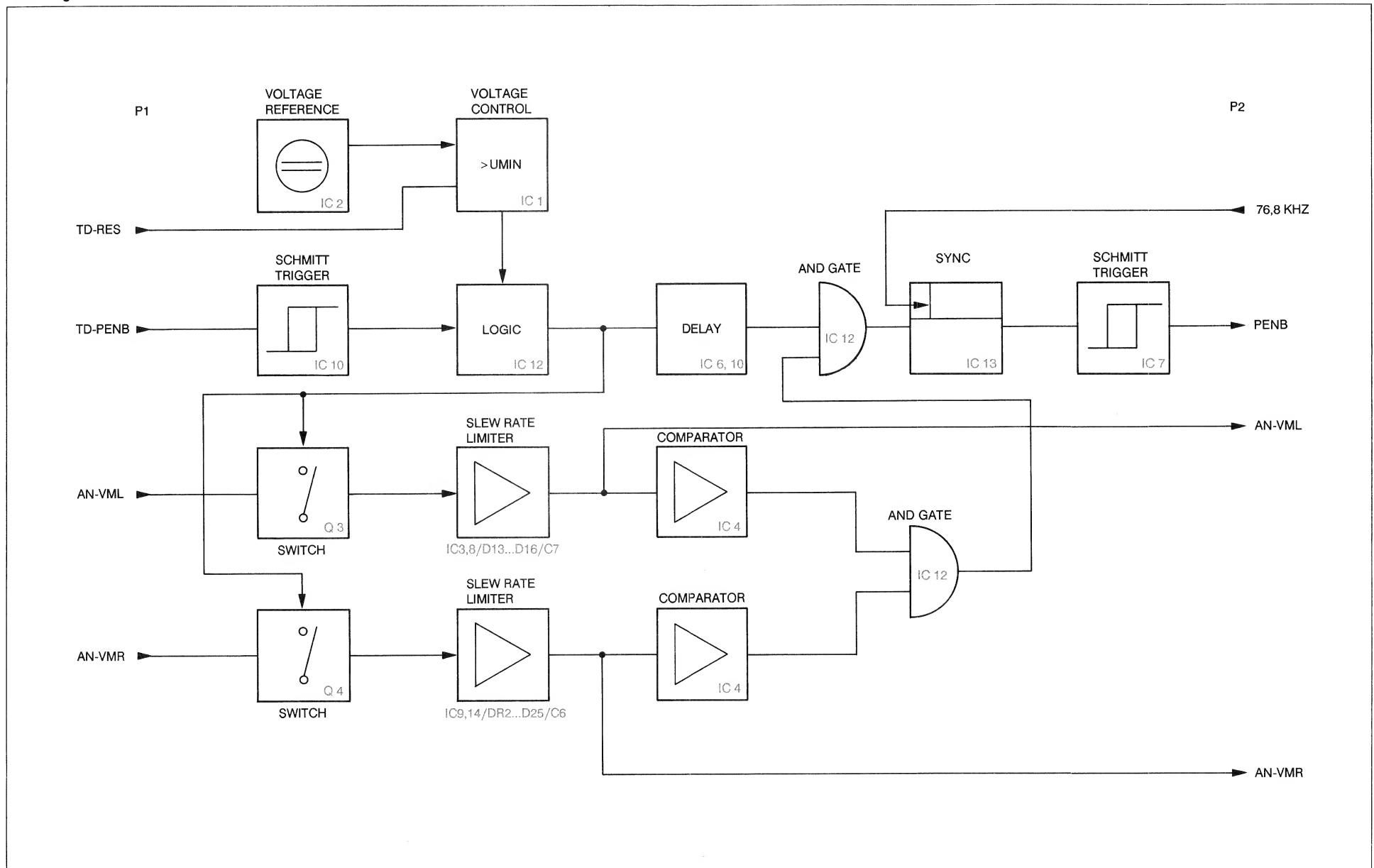


20 18.06.86 HAESSIG	25.11.86 HAESSIG			
A 812				PAGE 3 OF 3
STUDER	SPOOLING MOTOR CONTROLLER			1.811.772.20

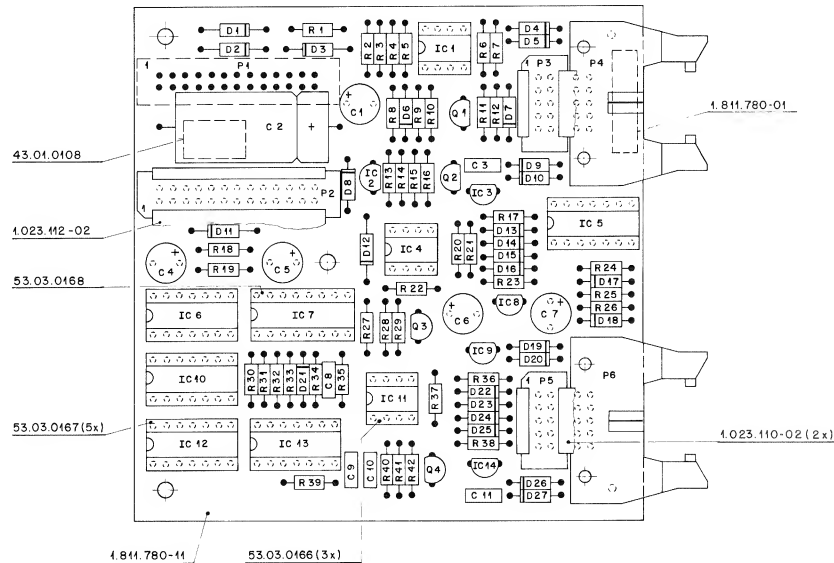
Spooling Motor Controller 1.811.772.20



Block Diagram Slew Rate Limiter Board 1.811.780



Slew Rate Limiter Board 1.811.780.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C****1		59x22x5101	100 uF	-20% 25V E1	
C****2		59x25x4102	1000 uF	-20% 25V E1	
C****3		59x25x2004	100 nF	10% 63V PETP	
C****4		59x22x5101	100 uF	-20% 25V E1	
C****5		59x22x5101	100 uF	-20% 25V E1	
C****6		59x22x5101	100 uF	-20% 25V E1	
C****7		59x22x5101	100 uF	-20% 25V E1	
C****8		59x25x5223	22 nF	5% 63V PETP	
C****9		59x25x0883	88 nF	10% 63V PETP	
C****10		59x25x0883	88 nF	10% 63V PETP	
C****11		59x25x0104	100 nF	10% 63V PETP	
D****1		50x24x0512	1N 5818	1N 5819	Not
D****2		50x24x0512	1N 5818	1N 5819	Not
D****3		50x24x0512	1N 5818	1N 5819	Not
D****4		50x24x0512	1N 5818	1N 5819	Not
D****5		50x24x0125	not used		
D****6		50x24x0125	1N 4448		
D****7		50x24x1117	12 V Z	BX 55 C 12 V	Fc:ITT-PhySes+TF
D****8		50x24x0125	1N 4448		ITT+Tot-Phy+TF+Th
D****9		50x24x0125	not used		Fc:ITT-PhySes+TF
D****10		50x24x0125	not used		
D****11		57x11x4003	not used	0 Ohm resistor or insulated wire bridge	
D****12		50x24x0125	1N 4448		Fc:ITT-PhySes+TF
D****13		50x24x0125	1N 4448		Fc:ITT-PhySes+TF
D****14		50x24x0125	1N 4448		Fc:ITT-PhySes+TF
D****15		50x24x0125	1N 4448		Fc:ITT-PhySes+TF
D****16		50x24x0125	1N 4448		Fc:ITT-PhySes+TF
D****17		50x24x0127	DAT 85	DAT 42x BAS 40-02	Ph:See+Th
D****18		50x24x0127	DAT 85	DAT 42x BAS 40-02	Ph:See+Th
D****19		50x24x0127	not used		
D****20		50x24x0127	DAT 85	DAT 42x BAS 40-02	Ph:See+Th
D****21		50x24x0127	DAT 85	DAT 42x BAS 40-02	Ph:See+Th
D****22		50x24x0125	1N 4448		Fc:ITT-PhySes+TF
D****23		50x24x0125	1N 4448		Fc:ITT-PhySes+TF
D****24		50x24x0125	1N 4448		Fc:ITT-PhySes+TF
D****25		50x24x0125	1N 4448		Fc:ITT-PhySes+TF

STUDER (03) 86/06/17 PB SLEW RATE LIMITER PL 1.811.780.00 PAGE 1

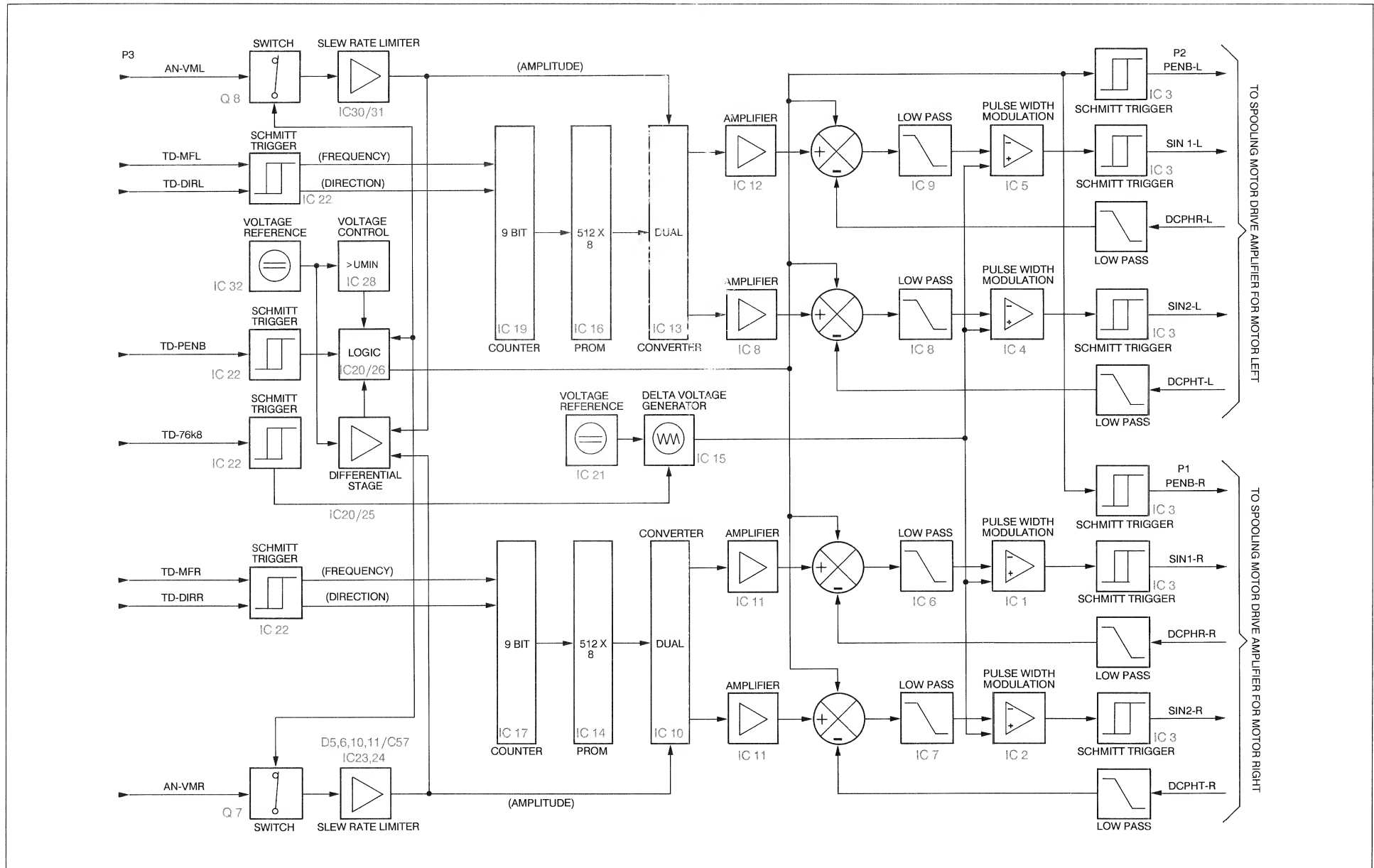
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
D****26		not used			
D****27		not used			
IC****1		50x35x0283	LM 393 P	LM 393 N ... DP	NS:Th+TI
IC****2		59x10x0108	TL431CIP		Not+TI
IC****3		50x10x0108	LM 317 L2		Not+NS
IC****4		50x10x0108	LM 393 P	LM 393 N ... DP	NS:Th+TI
IC****5		50x07x0214	MM74C014N	... 40105 ...	Not+Ph+NS
IC****6		50x11x0284	MC145086P	... 74 HC 86 ...	Not+NS+Ph+RC+VGS+TI+To
IC****7		50x15x0133	LM 337 L2		NS
IC****8		50x10x0108	LM 317 L2		Not+NS
IC****9		50x10x0108	LM 317 L2		Not+NS
IC****10		50x10x0108	LM 317 L2		Not+NS
IC****11		50x09x0101	TL 072 CP	LF 353 Nw TOR 0353 uP	NS:Th+TI
IC****12		50x11x0284	MC145086P	... 74 HC 08 ...	Not+NS+Ph+RC+VGS+TI+To
IC****13		50x17x1074	LM 337 L2	... 74 HC 74 ...	Not+NS+Ph+RC+VGS+TI+To
IC****14		50x10x0108	LM 317 L2		NS
P****1		59x14x2003	26 cont.	see note 1	
P****2		59x14x2003	10 cont.	see note 2	
P****3		59x14x2011	10 cont.	see note 3	
P****4		59x14x2011	10 cont.	see note 4	
P****5		59x14x2011	10 cont.	see note 5	
Q****1		50x33x0351	8C 327-25		ITT+Ph+Sim
Q****2		50x33x0351	8C 327-25		Sim
Q****3		50x33x0351	8C 327-25		Sim
Q****4		50x33x0351	8C 327-25		Sim
R****1		57x11x4073	47 kOhm	2%	
R****2		57x11x4032	3.3 kOhm	2%	
R****3		57x11x4073	470 kOhm	2%	
R****4		57x11x4025	120 kOhm	2%	
R****5		57x11x4073	4.7 kOhm	2%	
R****6		57x11x3123	1.0 kOhm	1%	
R****7		57x11x3242	2.4 kOhm	1%	

STUDER (03) 86/06/17 PB SLEW RATE LIMITER PL 1.811.780.00 PAGE 2

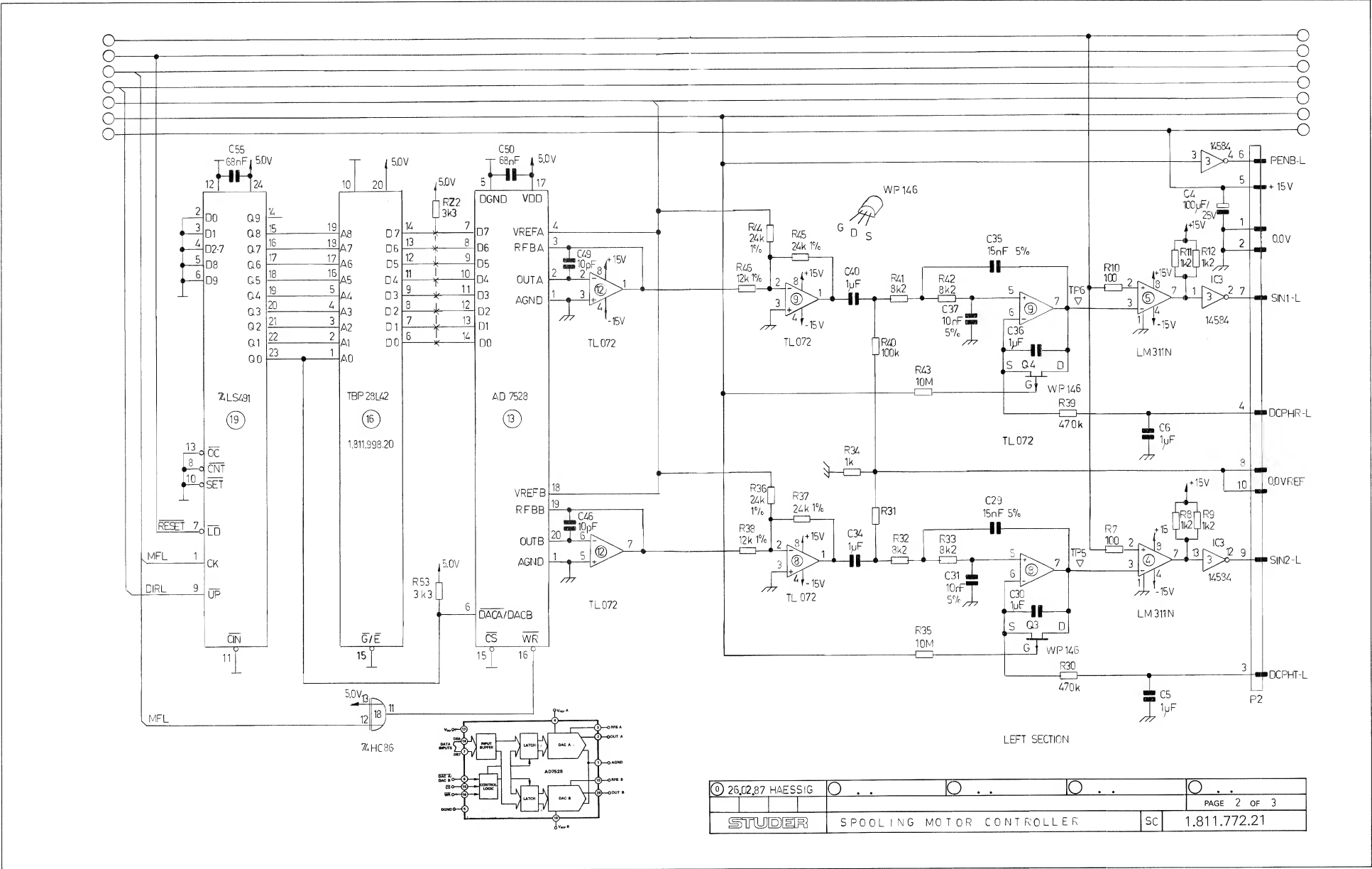
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R****8		57x11x4102	1 kOhm	2%	
R****9		57x11x4103	150 Ohm	2%	
R****10		57x11x4103	10 kOhm	2%	
R****11		57x11x4073	470 kOhm	2%	
R****12		57x11x4073	470 kOhm	2%	
R****13		57x11x3123	1.0 kOhm	1%	
R****14		57x11x4103	10 kOhm	2%	
R****15		57x11x3107	1 kOhm	1%	
R****16		57x11x4104	100 kOhm	2%	
R****17		57x11x4121	120 Ohm	2%	
R****18		57x11x4103	10 kOhm	2%	
R****19		57x11x4103	10 kOhm	2%	
R****20		57x11x4103	10 kOhm	2%	
R****21		57x11x4103	10 kOhm	2%	
R****22		57x11x4103	10 kOhm	2%	
R****23		57x11x4103	10 kOhm	2%	
R****24		57x11x4103	10 kOhm	2%	
R****25		57x11x4103	10 kOhm	2%	
R****26		57x11x4103	10 kOhm	2%	
R****27		57x11x4103	10 kOhm	2%	
R****28		57x11x4103	10 kOhm	2%	
R****29		57x11x4103	10 kOhm	2%	
R****30		57x11x4103	10 kOhm	2%	
R****31		57x11x4103	10 kOhm	2%	
R****32		57x11x4103	10 kOhm	2%	
R****33		57x11x4103	10 kOhm	2%	
R****34		57x11x4103	10 kOhm	2%	
R****35		57x11x4103	10 kOhm	2%	
R****36		57x11x4103	10 kOhm	2%	
R****37		57x11x4103	10 kOhm	2%	
R****38		57x11x4103	10 kOhm	2%	
R****39		57x11x4103	10 kOhm	2%	
R****40		57x11x4103	10 kOhm	2%	
R****41		57x11x4103	10 kOhm	2%	
R****42		57x11x4103	10 kOhm	2%	

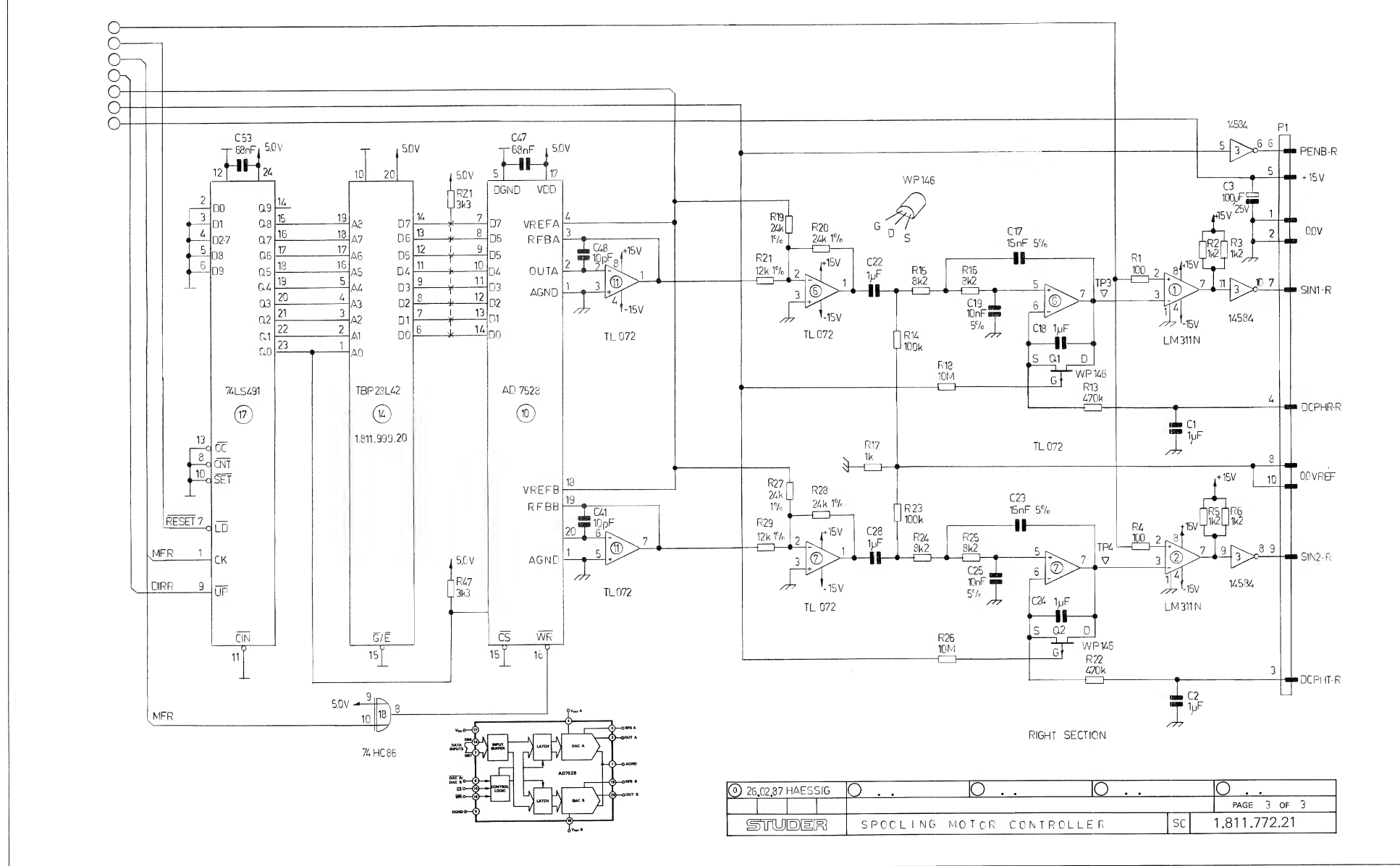
STUDER (07) 86/06/17 PB SLEW RATE LIMITER PL 1.811.780.00 PAGE 3

Block Diagram Spooling Motor Controller 1.811.772.21

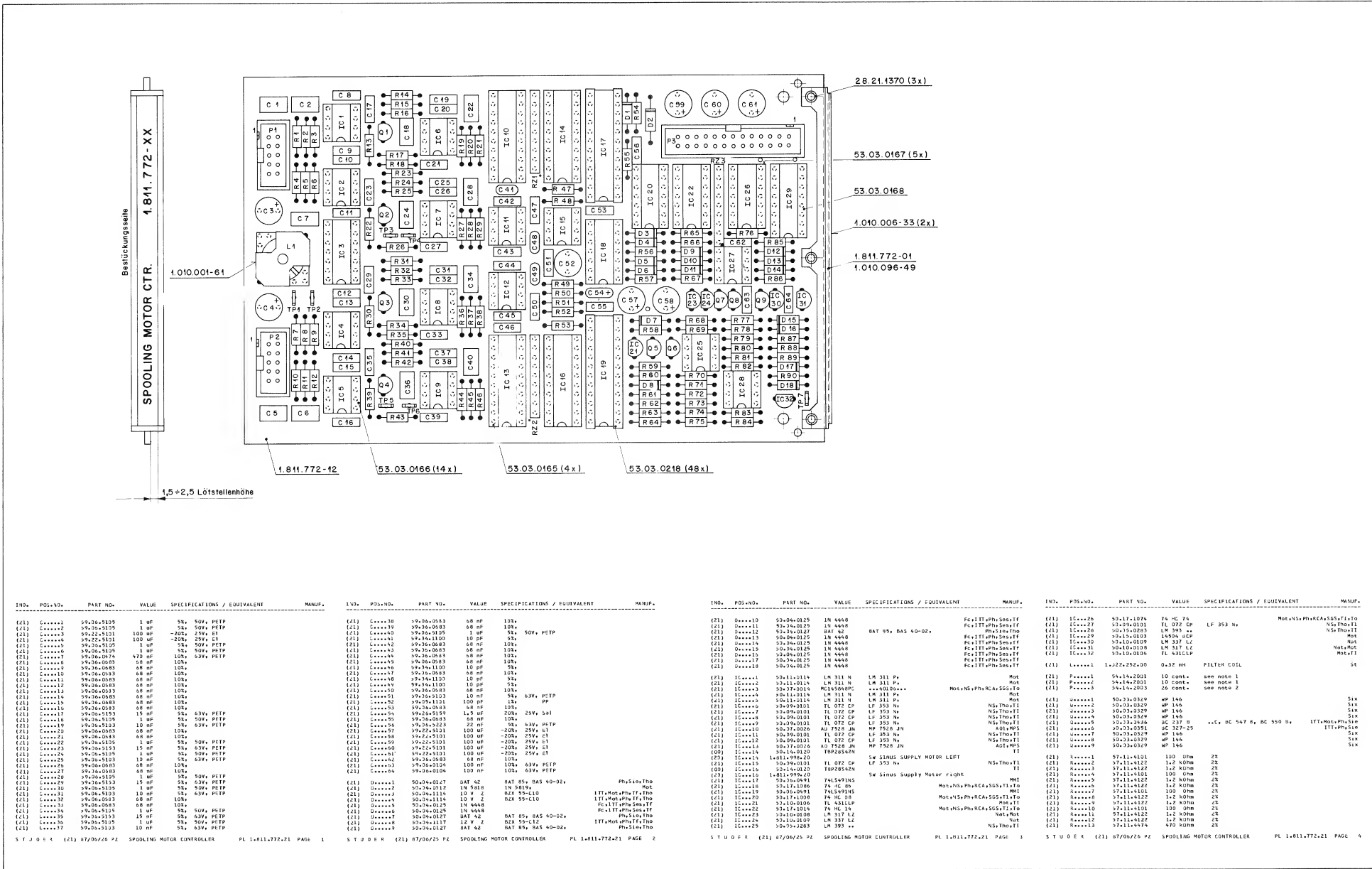


Spooling Motor Controller 1.811.772.21





Spooling Motor Controller 1.811.772.81



Spooling Motor Controller 1.811.772.81

IND.	PDS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PDS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(Z1)	R....14	57.11.4104	100 kOhm	2%		Note 1 - connector, 10 contacts: Yamaichi Nr. FAP-10-08-40SS Burndy Nr. BPH 9 B10 B00 GS 3M Nr. 7610-600Z VZ					
(Z1)	R....15	57.11.4322	8.2 kOhm	2%		Note 2 - connector, 25 contacts: Yamaichi Nr. FAP-26-08-40SS Burndy Nr. BPH 9 B26 B00 GS 3M Nr. 7626-600Z VZ					
(Z1)	R....16	57.11.4922	8.2 kOhm	2%		Note 3 - Resistor Network 8 x 3.3 kOhm, 5% Sourns Nr. 4609 X - 101 - 332 Beckmann Nr. L - 09 - 1 - R 3.3 k J Sprague Nr. 256 C J 332 X2 PD Matsushita Nr. F 9 E 3.3 k 5% Tana Nr. MRG C 09 X 3.3 k J					
(Z1)	R....17	57.11.4107	1 kOhm	2%		Cer=Ceramic, El=Electrolytic, Sol= Solid aluminium, PETP=Polyesterfilm, PP=Polypropylene					
(Z1)	R....18	57.11.5106	10 MOhm	5%		MANUFACTURER: ADI=Analog Devices Inc., Fc=Fairchild, ITT=Intermetal, MMI=Monolithic Memories, Mot=Motorola, MPS=Micro Power Systems, Nat=National (Matsushita), NS=National Semiconductors, Pn=Philips, RCA=RCA Corporation of America, Ses=Secosem, Sps=SiS/Ates, Ste=Summus, Sil=Siliconix, St=Studer, Tf=Telefunken, Tho=Thomson-CSF, TI=Texas Instruments, To=Toshiba.					
(Z1)	R....19	57.11.3243	24 kOhm	1%		ORIG 87/06/26					
(Z1)	R....20	57.11.3243	24 kOhm	1%		S T U D E R (Z1) 37/06/25 PL SPOOLING MOTOR CONTROLLER PL 1.811.772.21 PAGE 5					
(Z1)	R....21	57.11.3123	12 kOhm	1%		S T U D E R (Z1) 37/06/25 PL SPOOLING MOTOR CONTROLLER PL 1.811.772.21 PAGE 8					
(Z1)	R....22	57.11.4474	470 kOhm	2%							
(Z1)	R....23	57.11.4104	100 kOhm	2%							
(Z1)	R....24	57.11.4922	8.2 kOhm	2%							
(Z1)	R....25	57.11.4922	8.2 kOhm	2%							
(Z1)	R....26	57.11.5106	10 MOhm	5%							
(Z1)	R....27	57.11.3243	24 kOhm	1%							
(Z1)	R....28	57.11.3243	24 kOhm	1%							
(Z1)	R....29	57.11.3123	12 kOhm	1%							
(Z1)	R....30	57.11.4474	470 kOhm	2%							
(Z1)	R....31	57.11.4104	100 kOhm	2%							
(Z1)	R....32	57.11.4922	8.2 kOhm	2%							
(Z1)	R....33	57.11.4922	8.2 kOhm	2%							
(Z1)	R....34	57.11.4102	1 kOhm	2%							
(Z1)	R....35	57.11.5106	10 MOhm	5%							
(Z1)	R....36	57.11.3243	24 kOhm	1%							
(Z1)	R....37	57.11.3243	24 kOhm	1%							
(Z1)	R....38	57.11.3123	12 kOhm	1%							
(Z1)	R....39	57.11.4474	470 kOhm	2%							
(Z1)	R....40	57.11.4104	100 kOhm	2%							
(Z1)	R....41	57.11.4922	8.2 kOhm	2%							
(Z1)	R....42	57.11.4922	8.2 kOhm	2%							
(Z1)	R....43	57.11.5106	10 MOhm	5%							
(Z1)	R....44	57.11.3243	24 kOhm	1%							
(Z1)	R....45	57.11.3243	24 kOhm	1%							
(Z1)	R....46	57.11.3123	12 kOhm	1%							
(Z1)	R....47	57.11.4332	3.3 kOhm	2%							
(Z1)	R....48	57.11.3752	7.5 kOhm	1%							
(Z1)	R....49	57.11.5155	1.5 MOhm	5%							
(Z1)	R....50	57.11.4472	4.7 kOhm	2%							

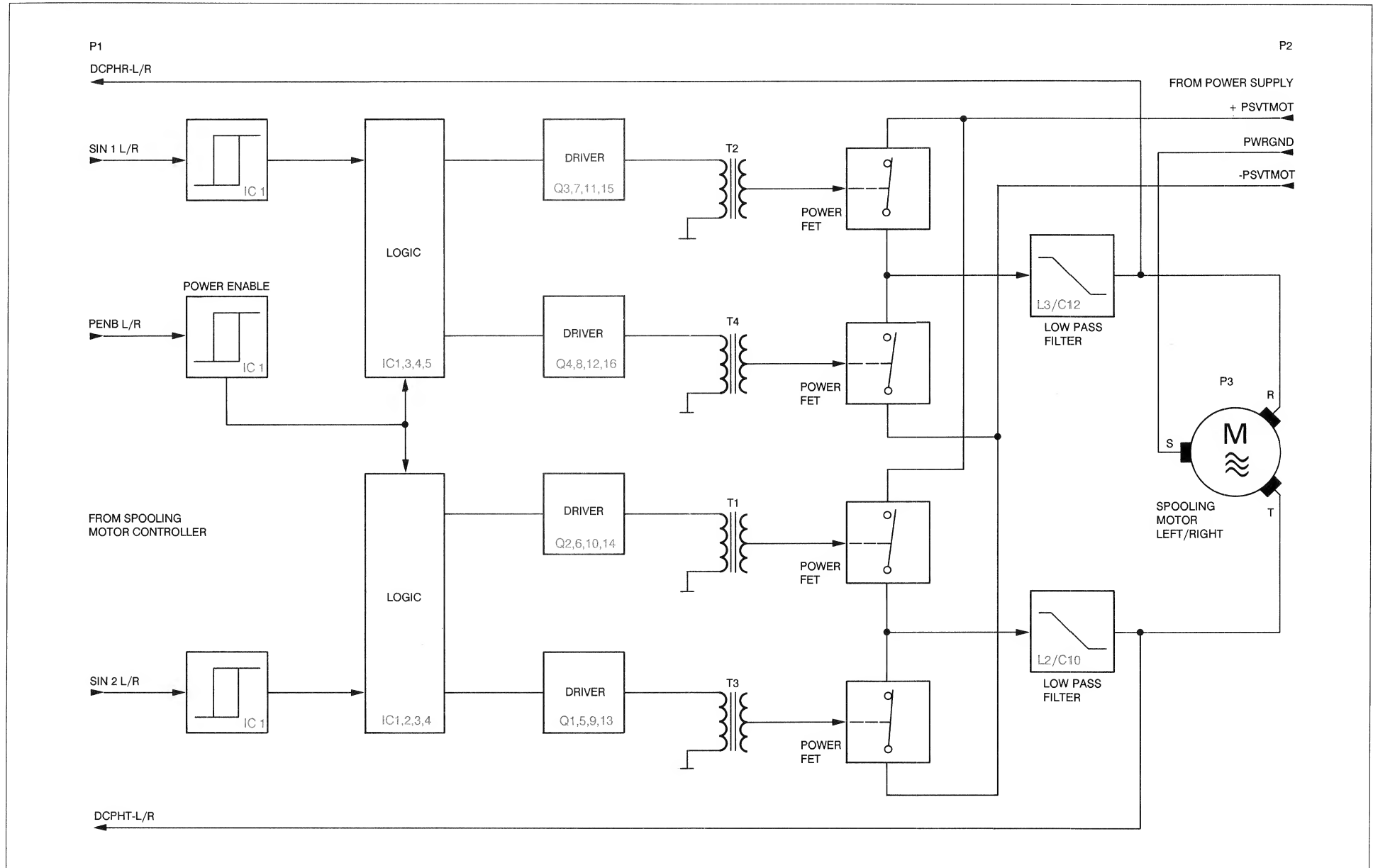
IND.	PDS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(Z1)	R....51	57.11.4102	1 kOhm	2%	
(Z1)	R....52	57.11.4102	1 kOhm	2%	
(Z1)	R....53	57.11.4332	3.3 kOhm	2%	
(Z1)	R....54	57.11.4224	220 kOhm	2%	
(Z1)	R....55	57.11.4102	1 kOhm	2%	
(Z1)	R....56	57.11.4104	100 kOhm	2%	
(Z1)	R....57	57.11.4121	120 Ohm	2%	
(Z1)	R....58	57.11.4472	4.7 kOhm	2%	
(Z1)	R....59	57.11.4471	470 Ohm	2%	
(Z1)	R....60	57.11.4471	470 Ohm	2%	
(Z1)	R....61	57.11.3243	24 kOhm	1%	
(Z1)	R....62	57.11.3713	91 kOhm	1%	
(Z1)	R....63	57.11.4331	330 Ohm	2%	
(Z1)	R....64	57.11.4331	330 Ohm	2%	
(Z1)	R....65	57.11.4222	2.2 kOhm	2%	
(Z1)	R....66	57.11.4222	2.2 kOhm	2%	
(Z1)	R....67	57.11.4101	100 Ohm	2%	
(Z1)	R....68	57.11.4122	1.2 kOhm	2%	
(Z1)	R....69	57.11.4103	10 kOhm	2%	
(Z1)	R....70	57.11.4474	470 kOhm	2%	
(Z1)	R....71	57.11.4103	10 kOhm	2%	
(Z1)	R....72	57.11.4102	1 kOhm	2%	
(Z1)	R....73	57.11.4102	1 kOhm	2%	
(Z1)	R....74	57.11.4103	10 kOhm	2%	
(Z1)	R....75	57.11.4474	470 kOhm	2%	
(Z1)	R....76	57.11.4104	100 kOhm	2%	
(Z1)	R....77	57.11.4104	100 kOhm	2%	
(Z1)	R....78	57.11.4474	470 kOhm	2%	
(Z1)	R....79	57.11.4473	47 kOhm	2%	
(Z1)	R....80	57.11.4472	4.7 kOhm	2%	
(Z1)	R....81	57.11.4332	3.3 kOhm	2%	
(Z1)	R....82	57.11.4272	2.7 kOhm	2%	
(Z1)	R....83	57.11.4124	120 kOhm	2%	
(Z1)	R....84	57.11.4103	10 kOhm	2%	
(Z1)	R....85	57.11.4104	100 kOhm	2%	
(Z1)	R....86	57.11.4101	100 Ohm	2%	
(Z1)	R....87	57.11.4121	120 Ohm	2%	

S T U D E R (Z1) 37/06/26 PL SPOOLING MOTOR CONTROLLER PL 1.811.772.21 PAGE 6

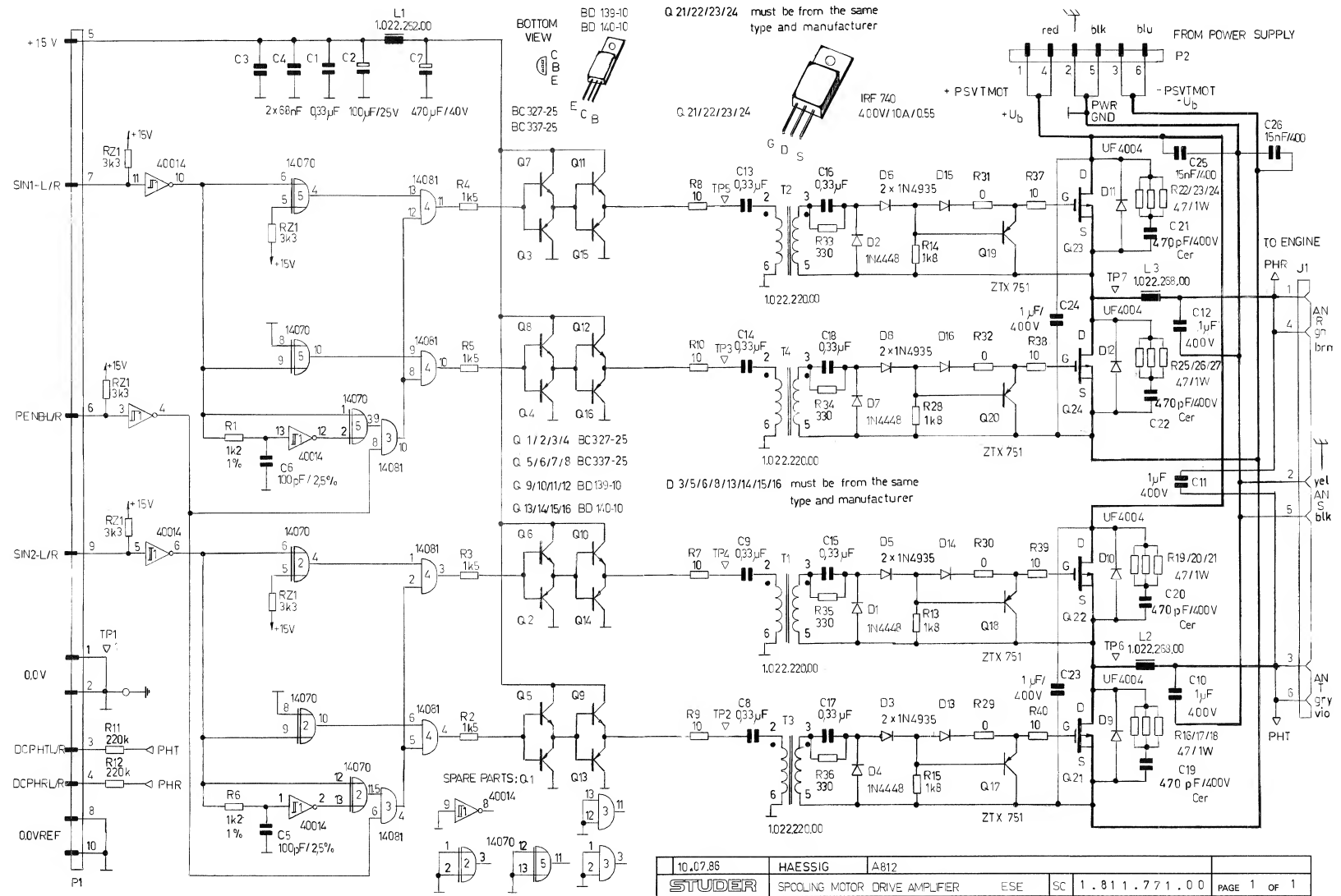
IND.	PDS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(Z1)	R....88	57.11.4104	100 kOhm	2%	
(Z1)	R....89	57.11.4151	150 Ohm	2%	
(Z1)	R....90	57.11.4102	1 kOhm	2%	
(Z1)	RZ....1	57.88.4332	Network 8 x 3.3 kOhm 5%, see note 3		
(Z1)	RZ....2	57.88.4332	Network 8 x 3.3 kOhm 5%, see note 3		
(Z1)	RZ....3	57.88.4332	Network 8 x 3.3 kOhm 5%, see note 3		

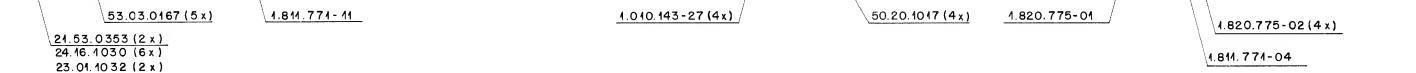
S T U D E R (Z1) 37/06/26 PL SPOOLING MOTOR CONTROLLER PL 1.811.772.21 PAGE 7

Block Diagram Spooling Motor Drive Amplifier 1.811.771.00/81



Spooling Motor Drive Amplifier ESE 1.811.771.00





S T U O F R (01) 07/09/07 00 SPOOLING MOTOR DRIVE AMPL. PL 1.811.771.00 PAGE

S T U O E R (01) 07/09/09 30 SPDOLING MUFOR ORIVE AMPL. PL 1.811.771.00 PAGE 5

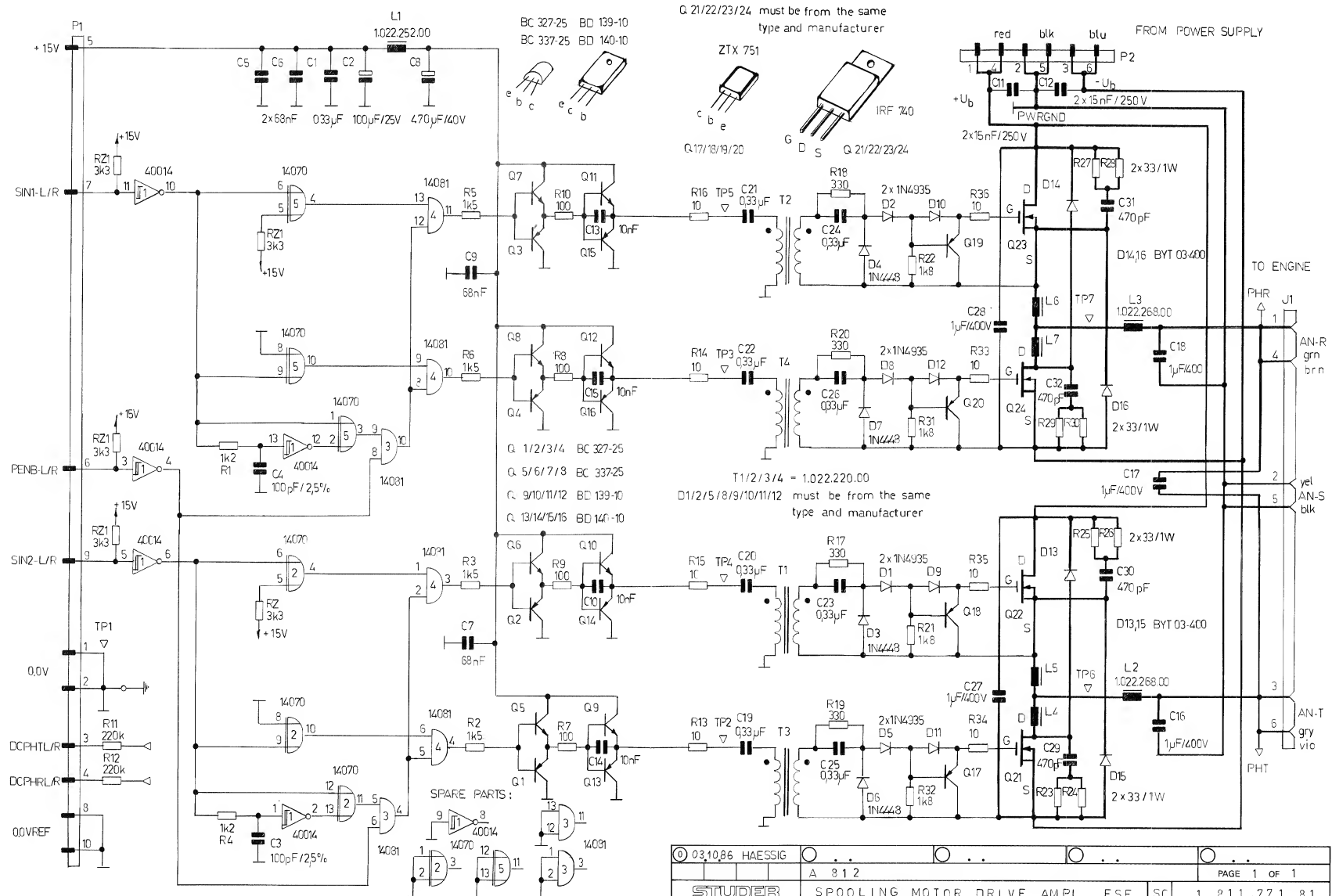
S T U D E R (01) 07/09/09 00 SPOOLING MOTOR DRIVE AMPL. PL 1.811.771.00 PAGE 1

S T U D E R (01) 07/09/07 BU SPOOLING MOTOR DRIVE ASPL. PL 1.811.771.00 PAGE 2

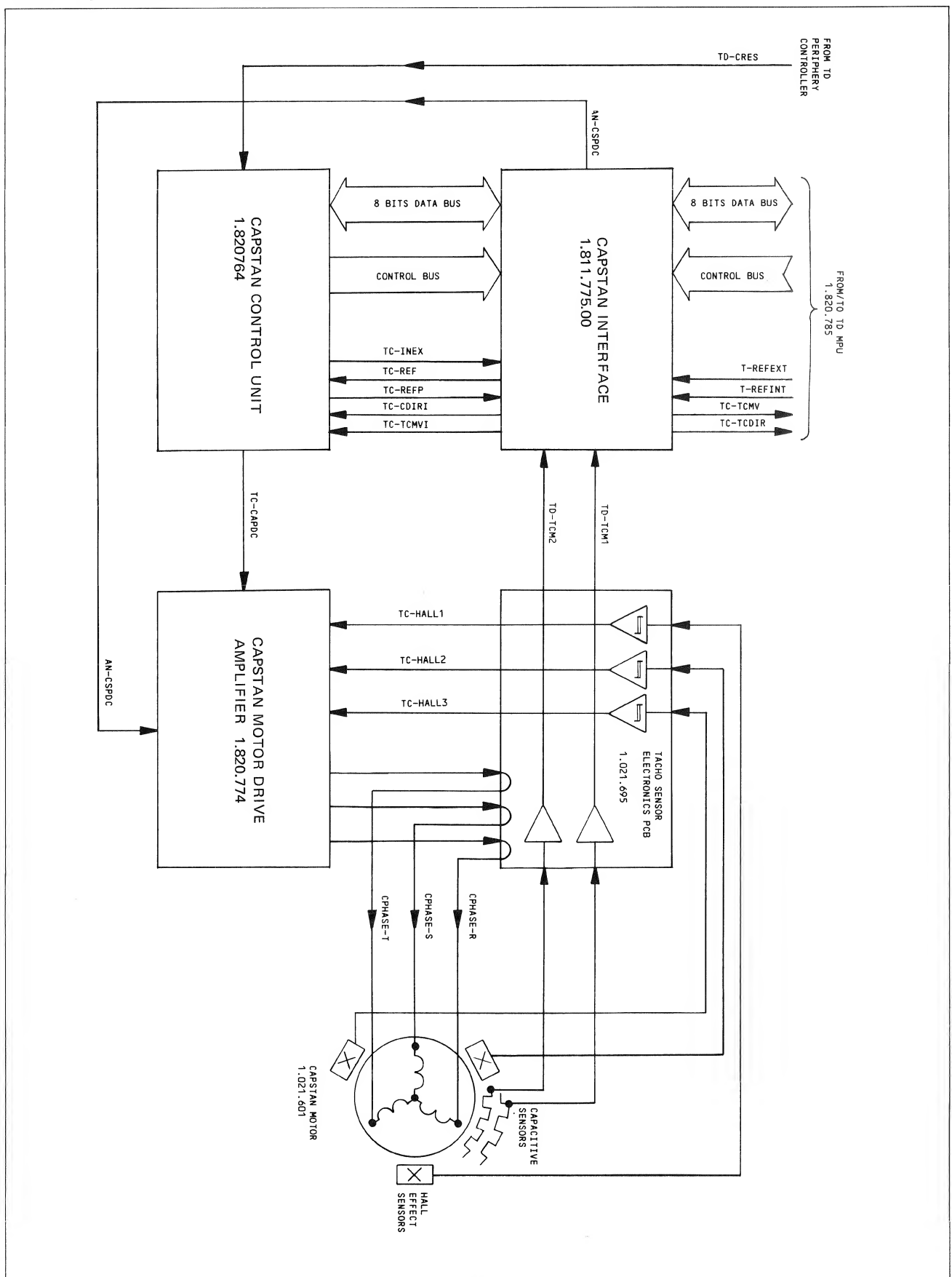
S Y U O E R (01) 87/09/09 BD SPOOLING MOTOR DRIVE AMPL. PL 1.811.771.00 PAGE

S T U O E R (01) 87/09/09 50 SPOOLING MOTOR DRIVE AMPL. PL 1.811.771.00 PAGE 6

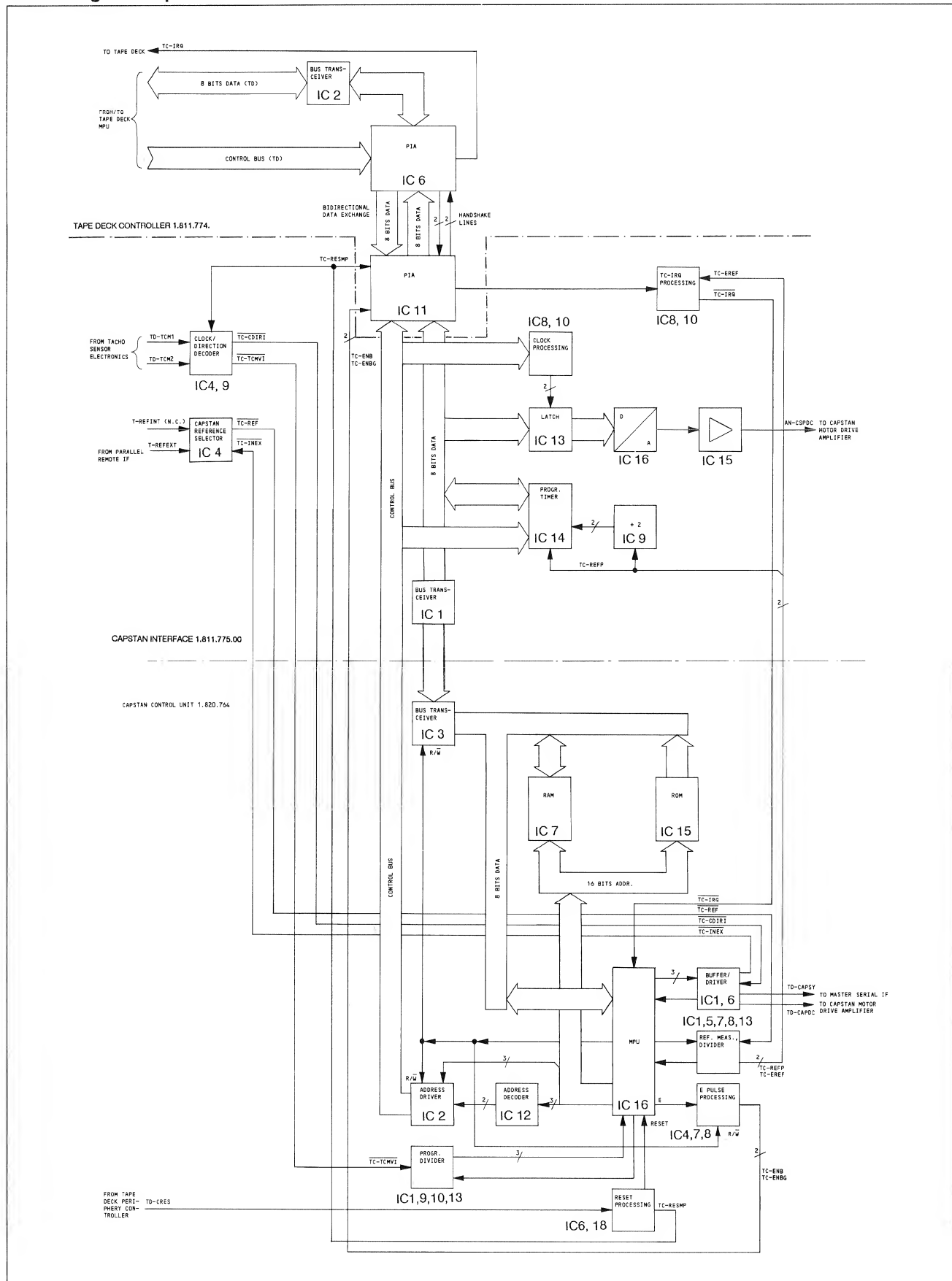
Spooling Motor Drive Ampl. ESE 1.811.771.81



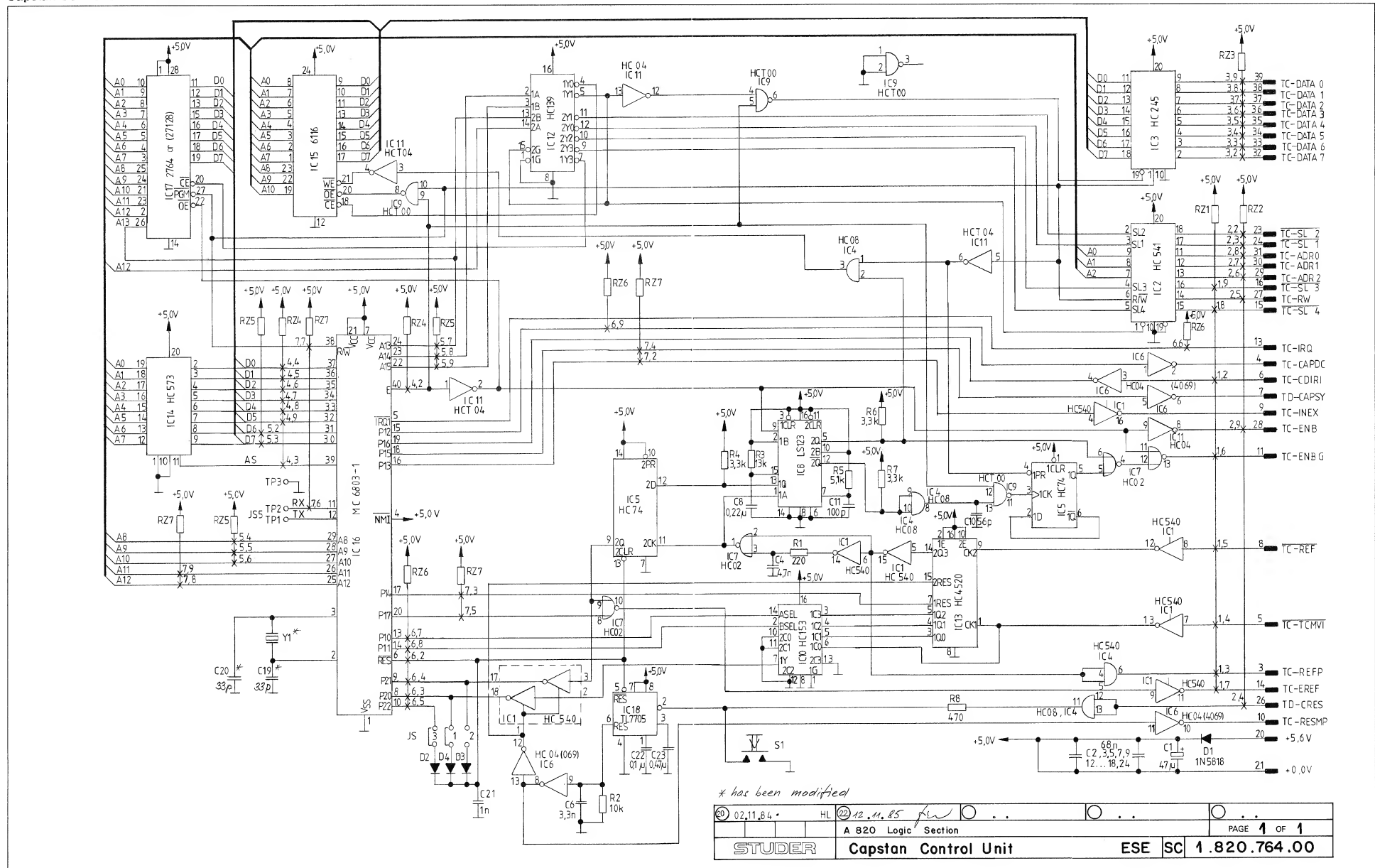
Block Diagram (Survey) Capstan Motor Control



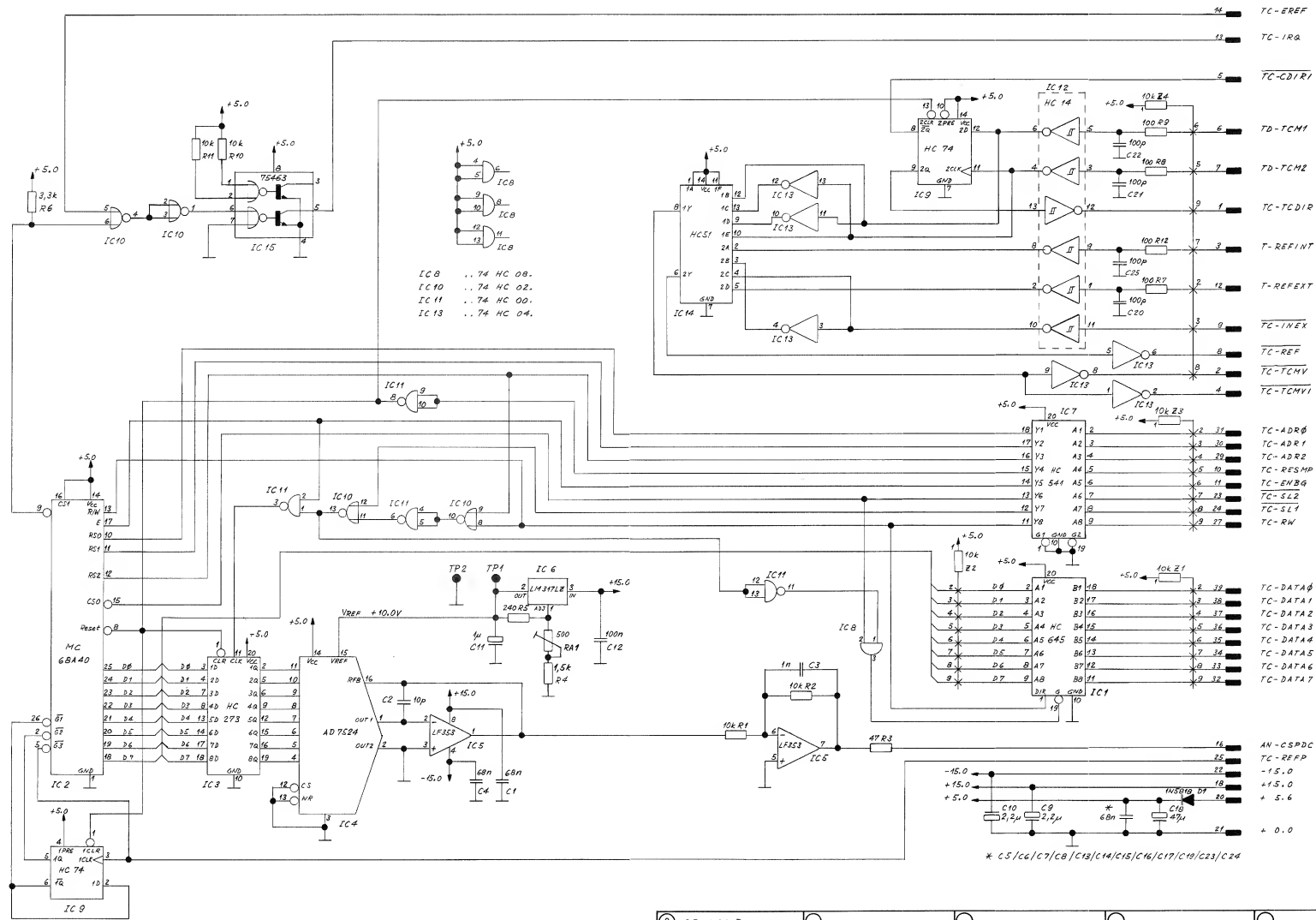
Block Diagram Capstan Control Unit General 1.811.775



Capstan Control Unit ESE 1.820.764.00



Capstan Motor Interface 1.811.775.00



① 25.06.86 Buchegger	○ . .	○ . .	○ . .	○ . .	PAGE 1 OF 1
STUDER	CAPSTAN MOTOR INTERFACE				1.811.775.00

Capstan Motor Interface 1.811.775.00

Bestückungsliste

CAPSTAN MOTOR INTERFACE 1.811.775-XX

53.03.0165 (3x)

53.03.0173

53.03.0108

28.21.1370 (5x)

1.010.006-33 (2x)

1.811.775-01

1.010.096-49

53.03.0167 (7x)

53.03.0166 (2x)

43.01.0108

1.811.775-11

1,5-2,5 Lötstellenhöhe

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-1100	10 pF		5%	CR
C.....	59-06-0102	1 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-06-0083	68 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-06-0083	68 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-0229	2,2 uF	20%	25V, 501	Ph&I
C.....	59-20-0229	2,2 uF	20%	25V, 501	Ph&I
C.....	59-20-0129	100 nF	10%	PETP	
C.....	59-06-0104	100 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-06-0083	68 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-0570	47 uF	20%	6,3V, 501	Ph&I
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-0101	100 pF	5%	Ce	
C.....	59-20-0101	100 pF	5%	Ce	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-0083	68 nF	10%	PETP	
C.....	59-20-0101	100 pF	5%	Ce	
D.....	50-04-0512	1N 5018	1N 5019		Mot
IC.....	53-17-1045	74 HC 645	.. 74 HC 645 ..	Mot&NS&Ph&RCA&SG&Ti&To	
IC.....	50-10-0113	MC68 A90 P	MO68 A90 P	Hi&Mot	
IC.....	50-17-1273	74 HC 273	.. 74 HC 273 ..	Mot&NS&Ph&RCA&SG&Ti&To	
IC.....	50-07-0022	40 7524 JN	MP 7524 JN	AD&MPS	
IC.....	50-09-0101	16 012 C P	LP 353 Nv TDR 0353 OP	NS&Ti&To	
IC.....	50-10-0108	1A 317 L2	.. 74 HC 541 ..	Mot&NS&Ph&RCA&SG&Ti&To	
IC.....	53-17-1045	74 HC 541	.. 74 HC 541 ..	Mot&NS	
IC.....	50-17-1008	74 HC 08	.. 74 HC 08 ..	Mot&NS&Ti&To	
IC.....	50-17-1074	74 HC 74	.. 74 HC 74 ..	Mot&NS&RCA&SG&Ti&To	

STUDER (00) 86/06/25 Ph CAPSTAN MOTOR INTERFACE PL 1.811.775-00 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC.....	50-17-1007	74 HC 02	.. 74 HC 02 ..	Mot&NS&Ti&To	
IC.....	53-17-1027	74 HC 02	.. 74 HC 02 ..	Mot&NS&Ti&To	
IC.....	50-17-1214	74 HC 14	.. 74 HC 14 ..	Mot&NS&Ti&To	
IC.....	53-17-1024	74 HC 04	.. 74 HC 04 ..	Mot&NS&Ti&To	
IC.....	53-17-1051	74 HC 01	.. 74 HC 01 ..	Mot&NS&Ph&RCA&SG&Ti&To	
IC.....	50-05-0005	58 75663 P	SR 75663 JN, SR 55663 JN, SR 55663 N	NS&Ti	
R.....	58-05-0501	500 Ohm	10%	see Note 1	
R.....	57-11-4103	10 kOhm	5%		
R.....	57-11-4103	10 kOhm	5%		
R.....	57-11-4103	47 Ohm	5%		
R.....	57-11-4102	1,5 kOhm	5%		
R.....	57-11-3791	240 Ohm	5%		
R.....	57-11-4102	100 Ohm	5%		
R.....	57-11-4101	100 Ohm	5%		
R.....	57-11-4101	100 Ohm	5%		
R.....	57-11-4103	10 kOhm	5%		
R.....	57-11-4103	10 kOhm	5%		
R.....	57-11-4101	100 Ohm	5%		
TP.....	56-02-0320		Testpoint		
TP.....	56-02-0320		Testpoint		
Z.....	57-88-4103		Network B # 10 kOhm, 5%	see Note 2	
Z.....	57-88-4103		Network B # 10 kOhm, 5%	see Note 2	
Z.....	57-88-4103		Network B # 10 kOhm, 5%	see Note 2	
Z.....	57-88-4103		Network B # 10 kOhm, 5%	see Note 2	

STUDER (00) 86/06/25 Ph CAPSTAN MOTOR INTERFACE PL 1.811.775-00 PAGE 2

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1 - Potentiometer					
Control Nr.		183 KZ 501			
Wattage Nr.		3296 Z - 1 - 501			
Wattage Nr.		POT 3103 Z - 1 501			
Spectrol Nr.		64 Z 501 T 000			
Note 2 - Network					
Rockmann Nr.		L - 09 - 1 R 30 k			
Tourne Nr.		4609 X - 101 - 103			
Kalschmidt Nr.		P # 6 10 K 36			
Sprague Nr.		256 C2 103 K2 80			
Tam Nr.		MS C 09 x 10 K 3			

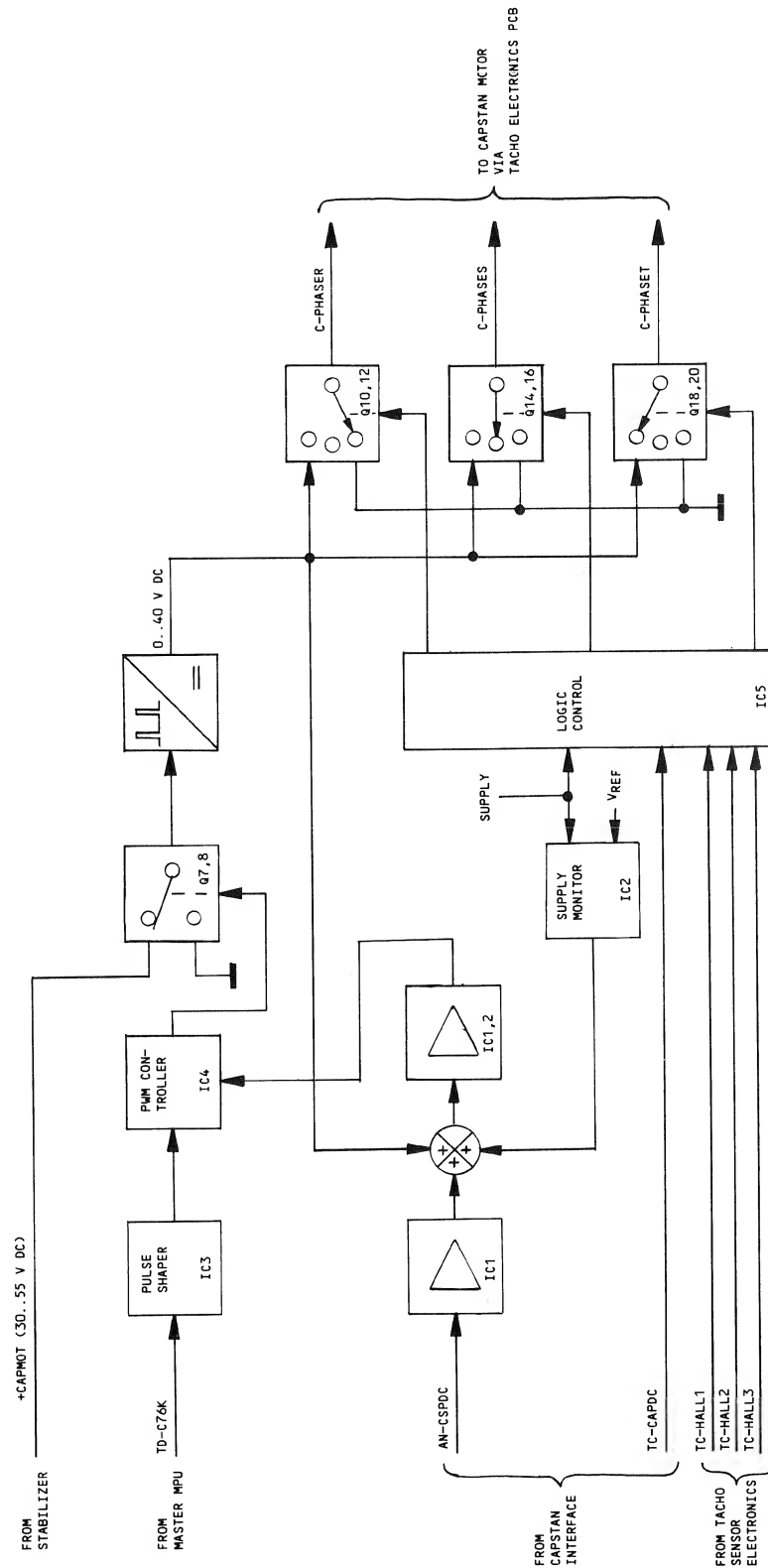
Cap: Ceramic, PETP: Polyesterfilm, Sol: Solid aluminium

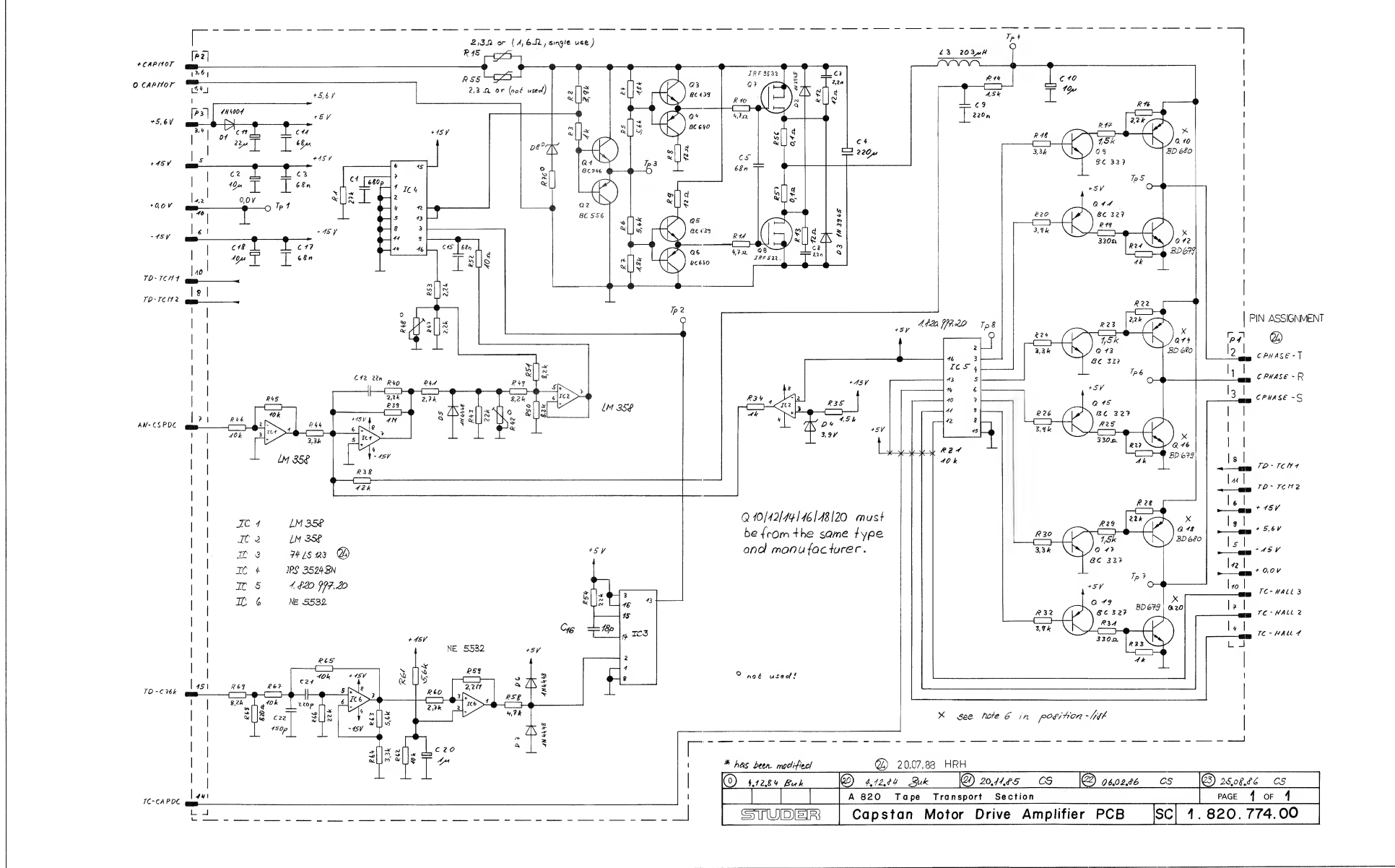
MANUFACTURER ADI: Analog Devices Inc., Hi: Hitachi, Mot: Motorola, MPS: Micro Power Systems, NS: National Semiconductors, Ph: Philips, RCA: RCA Corporation, R: Röhre, SG: SGS/Ates, Ti: Texas Instruments, Tho: Thomson, To: Toshiba.

DRI: 86/06/25

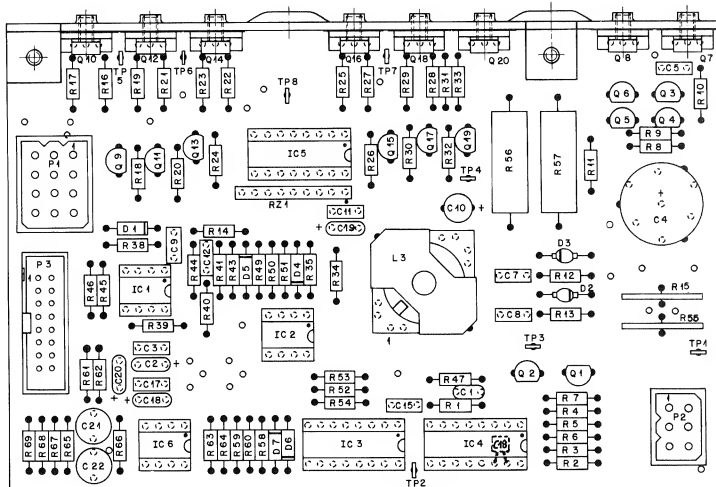
STUDER (00) 86/06/25 Ph CAPSTAN MOTOR INTERFACE PL 1.811.775-00 PAGE 3

Block Diagram Capstan Motor Drive Amplifier PCB "ESE" 1.820.774





Capstan Motor Drive Amplifier PCB 1.820.774.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	C.....1	59.32.2681	680 pF	10%, Ce	
(20)	C.....2	59.26.2100	10 uF	20%, 10V, EI	
(20)	C.....3	59.26.0883	68 nF	10%, PETP	
(20)	C.....4	59.22.9221	220 uF	>20%, 10V, EI	
(20)	C.....5	59.06.0683	68 nF	10%, PETP	
(20)	C.....6	59.06.0222	2200 pF	10%, 100V, PETP	
(20)	C.....7	59.06.0222	2200 pF	10%, 100V, PETP	
(20)	C.....8	59.06.0222	2200 pF	10%, 100V, PETP	
(20)	C.....9	59.06.0224	220 nF	10%, PETP	
(20)	C.....10	59.22.8100	10 uF	>20%, 63V, EI	
(20)	C.....11	59.06.0683	68 nF	10%, PETP	
(20)	C.....12	59.06.0223	22 nF	10%, PETP	
(20)	C.....13	59.06.0683	68 nF	10%, PETP	
(20)	C.....14	59.34.1180	not used		
(20)	C.....15	59.34.1180	18 pF	5%, Ce	
(20)	C.....16	59.06.0683	68 nF	10%, PETP	
(20)	C.....17	59.26.2100	10 uF	20%, 10V, EI	
(20)	C.....18	59.26.1220	22 uF	20%, 10V, EI	
(20)	C.....19	59.22.8109	1 uF	>20%, 10V, EI	
(20)	C.....20	59.05.1221	220 pF	2-5%, PP	
(20)	C.....21	59.05.1221	220 pF	2-5%, PP	
(20)	C.....22	59.05.2151	150 pF	2-5%, PP	
(20)	Q.....1	50.04.0122	1N 4001	to 400V	ITT, Mot
(20)	Q.....2	50.04.0508	1N 4935	1N 493A, RG 1.0, A 114 B	Not-GI
(20)	Q.....3	50.04.0508	1N 4935	1N 493A, RG 1.0, A 114 B	Not-GI
(20)	Q.....4	50.04.1101	3.9 V, Z	82X 83C 1V9; 82X 55C 3V9; ZPO 3.9	ITT-Ses
(20)	Q.....5	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....6	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....7	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....8	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....9	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....10	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....11	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....12	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....13	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....14	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....15	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....16	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....17	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....18	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....19	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....20	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....21	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....22	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....23	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....24	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....25	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....26	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....27	50.04.0125	1N 4448		Fc:ITTPhySessIF
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(20)	Q.....30	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....31	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....32	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....33	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....34	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....35	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....36	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....37	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....38	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....39	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....40	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....41	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....42	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....43	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....44	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....45	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....46	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....47	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....48	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....49	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....50	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....51	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....52	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....53	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....54	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....55	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....56	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....57	50.04.0125	1N 4448		Fc:ITTPhySessIF
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(20)	Q.....59	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....60	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....61	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....62	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....63	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....64	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....65	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....66	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....67	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....68	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....69	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....70	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....71	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....72	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....73	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....74	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....75	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....76	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....77	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....78	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....79	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....80	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....81	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....82	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....83	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....84	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....85	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....86	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....87	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....88	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....89	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....90	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....91	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....92	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....93	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....94	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....95	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....96	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....97	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....98	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....99	50.04.0125	1N 4448		Fc:ITTPhySessIF
(20)	Q.....100	50.04.0125	1N 4448		Fc:ITTPhySessIF

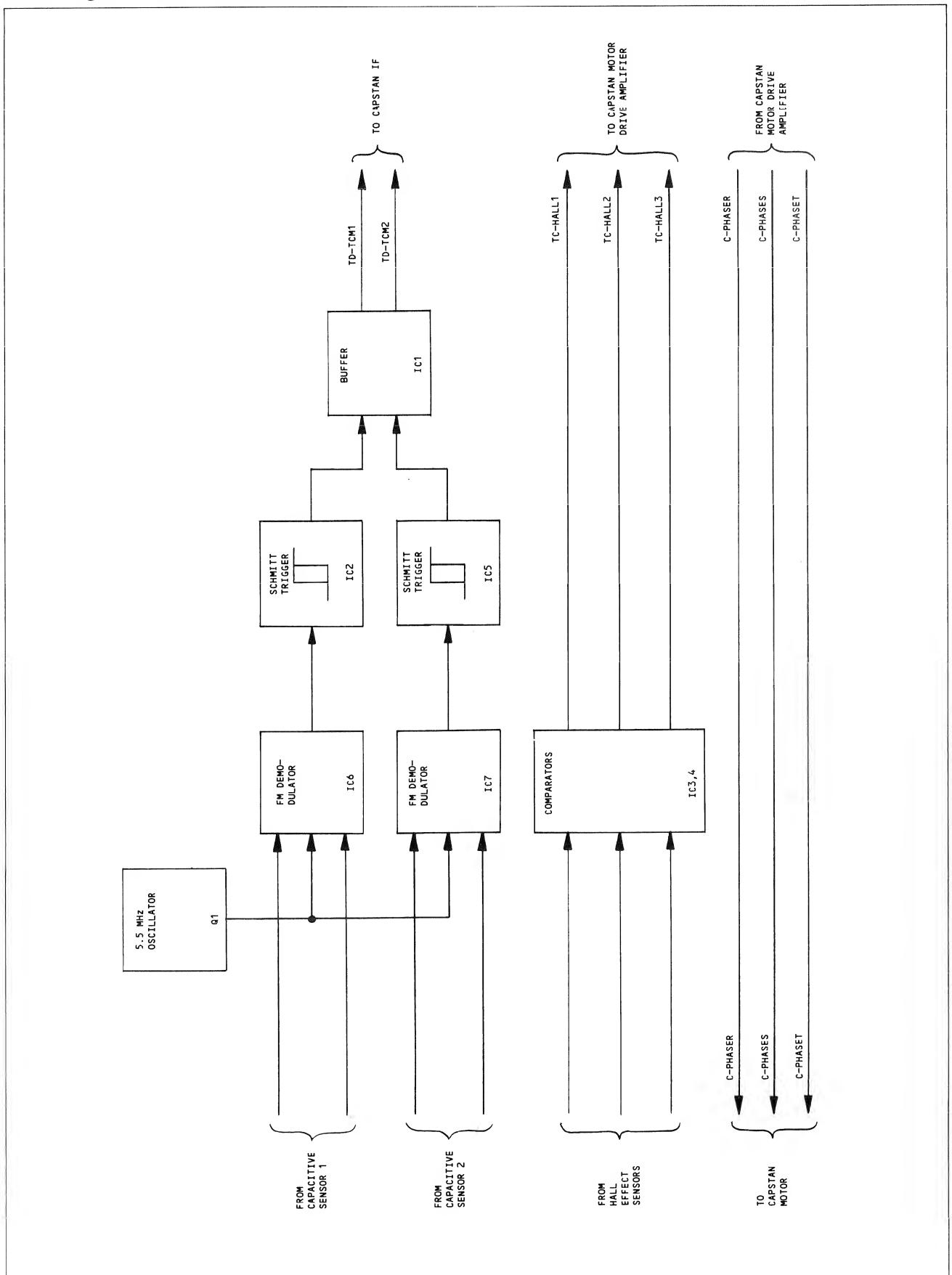
S T U O E R (22) 86/02/06 PB CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774.00 PAGE 1

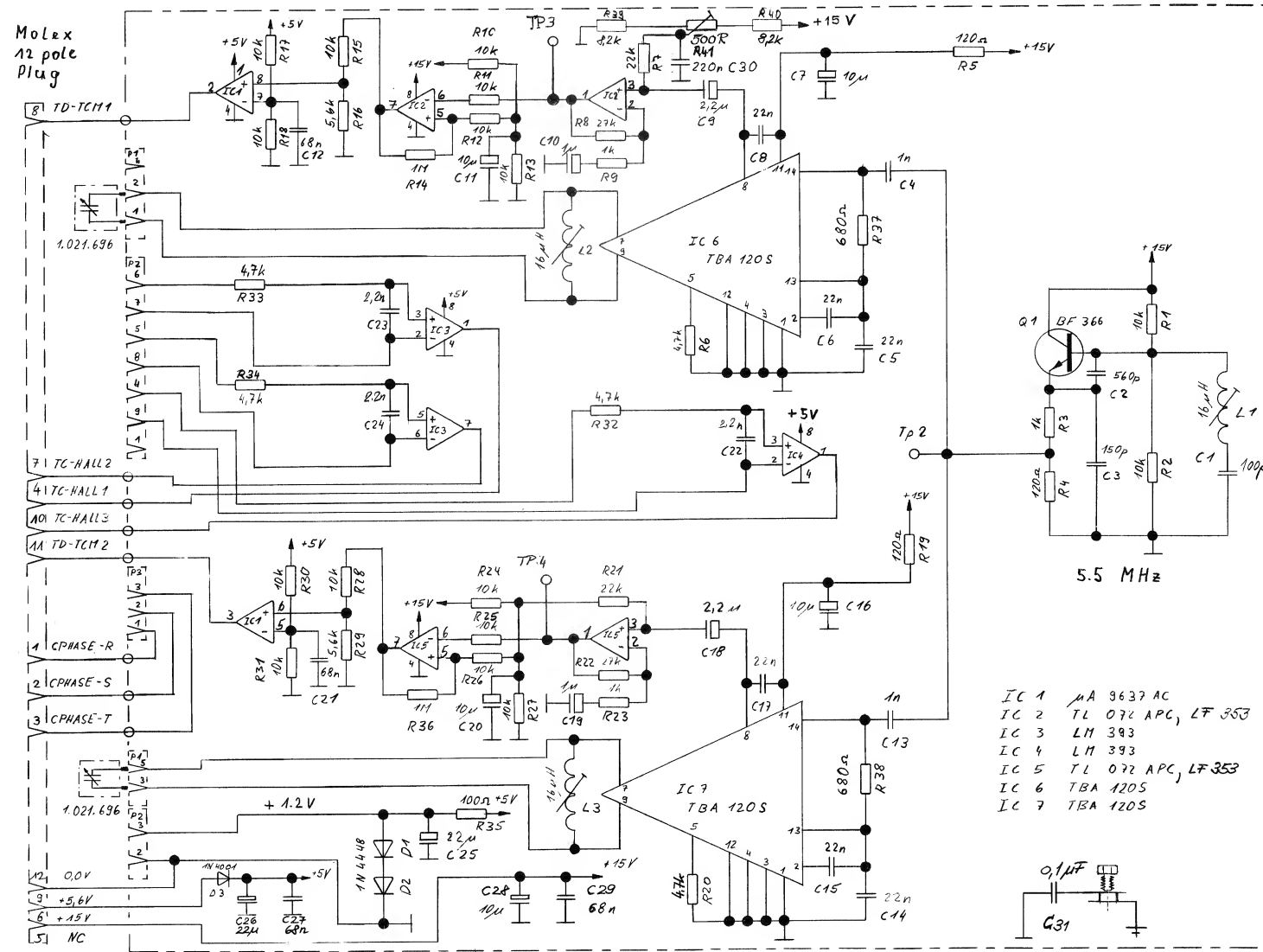
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	IC.....5	50.05.0206	N 82512M	63 5 081 J	MMI-Sig
(00)	IC.....5	1.820.997.20		1.820.997.20	SE
(00)	IC.....6	50.04.0105	NE 5532 N	58 5532 N, IC 532 N0	SE
(20)	L.....3	1.022-251.00		Filtercoil	St
(20)	P.....1		12 cont.	see Note 1	
(20)	P.....2		6 cont.	see Note 2	
(20)	P.....3	54.14.2002		10 cont.	see Note 3
(20)	Q.....1	50.03.0491	8C 5468		ITT, Mot, PhsSia
(20)	Q.....2	50.03.0492	8C 5568		ITT, Mot, PhsSia
(20)	Q.....3	50.03.0501	8C 639		Not-Ph
(20)	Q.....4	50.03.0502	8C 640		Not-Ph
(20)	Q.....5	50.03.0501	8C 639		Not-Ph
(20)	Q.....6	50.03.0502	8C 640		Not-Ph
(20)	Q.....7	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....8	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....9	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....10	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....11	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....12	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....13	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....14	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....15	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....16	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....17	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....18	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....19	50.03.1502	8C 5532		ITT, PhsSia
(20)	Q.....20	50.03.1502	8C 5532		ITT, PhsSia
(20)	R.....1	57.11.4213	27 kOhm	5%	
(20)	R.....2	57.11.4392	3.9 kOhm	5%	
(20)	R.....3	57.11.4102	1 kOhm	5%	
(20)	R.....4	57.11.4102	1 kOhm	5%	
(20)	R.....5	57.11.4562	5.6 kOhm	5%	
(20)	R.....6	57.11.4562	5.6 kOhm	5%	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	R.....7	57.11.4182	1.8 kOhm	5%	
(20)	R.....8	57.11.4120	12 kOhm	5%	
(20)	R.....9	57.11.4120	12 kOhm	5%	
(20)	R.....10	57.11.4479	4.7 kOhm	5%	
(20)	R.....11	57.11.4479	4.7 kOhm	5%	
(20)	R.....12	57.11.4120	12 kOhm	5%	
(20)	R.....13	57.11.4120	12 kOhm	5%	
(20)	R.....14	57.11.4152	1.5 kOhm	5%	
(20)	R.....15	57.11.4051	1.5 kOhm	5%	
(20)	R.....16	57.11.4222	2.2 kOhm	5%	
(20)	R.....17	57.11.4272	2.7 kOhm	5%	
(20)	R.....18	57.11.4332	3.3 kOhm	5%	
(20)	R.....19	57.11.4331	330 kOhm	5%	
(20)	R.....20	57.11.4392	3.9 kOhm	5%	
(20)	R.....21	57.11.4102	1 kOhm	5%	
(20)	R.....22	57.11.4222	2.2 kOhm	5%	
(20)	R.....23	57.11.4272	2.7 kOhm	5%	
(20)	R.....24	57.11.4332	3.3 kOhm	5%	
(20)	R.....25	57.11.4331	330 kOhm	5%	
(20)	R.....26	57.11.4392	3.9 kOhm	5%	
(20)	R.....27	57.11.4102	1 kOhm	5%	
(20)	R.....28	57.11.4222	2.2 kOhm	5%	
(20)	R.....29	57.11.4272	2.7 kOhm	5%	
(20)	R.....30	57.11.4332	3.3 kOhm	5%	
(20)	R.....31	57.11.4331	330 kOhm	5%	
(20)	R.....32	57.11.4392	3.9 kOhm	5%	
(20)	R.....33	57.11.4102	1 kOhm	5%	
(20)	R.....34	57.11.4102	1 kOhm	5%	
(20)	R.....35	57.11.4102	1 kOhm	5%	
(20)	R.....36	57.11.4152	1.5 kOhm	5%	
(20)	R.....37	57.11.4123	12 kOhm	5%	
(20)	R.....38	57.11.4105	1 uF	5%	
(20)	R.....39	57.11.4105	1 uF	5%	
(20)	R.....40	57.11.4222	2.2 kOhm	5%	
(20)	R.....41	57.11.4222	2.2 kOhm	5%	
(20)	R.....42	57.11.4222	2.2 kOhm	5%	
(20)	R.....43	57.11.4272	2.7 kOhm	5%	
(20)	R.....44	57.11.4332	3.3 kOhm	5%	
(20)	R.....45	57.11.4331	330 kOhm	5%	
(20)	R.....46	57.11.4392	3.9 kOhm	5%	
(20)	R.....47	57.11.4102	1 kOhm	5%	
(20)	R.....48	57.11.4102	1 kOhm	5%	
(20)	R.....49	57.11.4102	1 kOhm	5%	
(20)	R.....50	57.11.4152	1.5 kOhm	5%	
(20)	R.....51	57.11.4123	12 kOhm	5%	
(20)	R.....52	57.11.4105	1 uF	5%	
(20)	R.....53	57.11.4105	1 uF	5%	
(20)	R.....54	57.11.4222	2.2 kOhm	5%	
(20)	R.....55	57.11.4222	2.2 kOhm	5%	
(20)	R.....56	57.11.4222	2.2 kOhm	5%	
(20)	R.....57	57.11.4272	2.7 kOhm	5%	
(20)	R.....58	57.11.4332	3.3 kOhm	5%	
(20)	R.....59	57.11.4331	330 kOhm	5%	
(20)	R.....60	57.11.4392	3.9 kOhm	5%	
(20)	R.....61	57.11.4102	1 kOhm	5%	
(20)	R.....62	57.11.4102	1 kOhm	5%	
(20)	R.....63	57.11.4102	1 kOhm	5%	
(20)	R.....64	57.11.4152	1.5 kOhm	5%	
(20)	R.....65	57.11.4123	12 kOhm	5%	
(20)	R.....66	57.11.4105	1 uF	5%	
(20)	R.....67	57.11.4105	1 uF	5%	
(20)	R.....68	57.11.4222	2.2 kOhm	5%	
(20)	R.....69	57.11.4222	2.2 kOhm	5%	
(20)	R.....70	57.11.4222	2.2 kOhm	5%	
(20)	R.....71	57.11.4272	2.7 kOhm	5%	
(20)	R.....72	57.11.4332	3.3 kOhm	5%	
(20)	R.....73	57.11.4331	330 kOhm	5%	
(20)	R.....74	57.11.4392	3.9 kOhm	5%	
(20)	R.....75	57.11.4102	1 kOhm	5%	
(20)	R.....76	57.11.4102	1 kOhm	5%	
(20)	R.....77	57.11.4102	1 kOhm	5%	
(20)	R.....78	57.11.4152	1.5 kOhm	5%	
(20)	R.....79	57.11.4123	12 kOhm	5%	
(20)	R.....80	57.11.4105	1 uF	5%	
(20)	R.....81	57.11.4105	1 uF	5%	
(20)	R.....82	57.11.4222	2.2 kOhm	5%	
(20)	R.....83	57.11.4222	2.2 kOhm	5%	
(20)	R.....84	57.11.4222	2.2 kOhm	5%	
(20)	R.....85	57.11.4272	2.7 kOhm	5%	
(20)	R.....86	57.11.4332	3.3 kOhm	5%	
(20)	R.....87	57.11.4331	330 kOhm	5%	
(20)	R.....88	57.11.4392	3.9 kOhm	5%	
(20)	R.....89	57.11.4102	1 kOhm	5%	
(20)	R.....90	57.11.4102	1 kOhm	5%	
(20)	R.....91	57.11.4102	1 kOhm	5%	
(20)	R.....92	57.11.4152	1.5 kOhm	5%	
(20)	R.....93	57.11.4123	12 kOhm	5%	
(20)	R.....94	57.11.4105	1 uF	5%	
(20)	R.....95	57.11.4105	1 uF	5%	
(20)	R.....96	57.11.4222	2.2 kOhm	5%	
(20)	R.....97	57.11.4222	2.2 kOhm	5%	
(20)	R.....98	57.11.4222	2.2 kOhm	5%	
(20)	R.....99	57.11.4272	2.7 kOhm	5%	
(20)	R.....100	57.11.4332	3.3 kOhm	5%	
(20)	R.....101	57.11.4331	330 kOhm	5%	
(20)	R.....102	57.11.4392	3.9 kOhm	5%	
(20)	R.....103	57.11.4102	1 kOhm	5%	
(20)	R.....104	57.11.4102	1 kOhm	5%	
(20)	R.....105	57.11.4102	1 kOhm	5%	
(20)	R.....106	57.11.4152	1.5 kOhm	5%	
(20)	R.....107	57.11.4123	12 kOhm	5%	
(20)	R.....108	57.11.4105	1 uF	5%	
(20)	R.....109	57.11.4105	1 uF	5%	
(20)	R.....110	57.11.4222	2.2 kOhm	5%	
(20)	R.....111	57.11.4222	2.2 kOhm	5%	
(20)	R.....112	57.11.4222	2.2 kOhm	5%	
(20)	R.....113	57.11.4272	2.7 kOhm	5%	
(20)	R.....114	57.11.4332	3.3 kOhm	5%	
(20)	R.....115	57.11.4331	330 kOhm	5%	
(20)	R.....116	57.11.4392	3.9 kOhm	5%	
(20)	R.....117	57.11.4102	1 kOhm	5%	
(20)	R.....118	57.11.4102	1 kOhm	5%	
(20)	R.....119	57.11.4102	1 kOhm	5%	
(20)	R.....120	57.11.4152	1.5 kOhm	5%	
(20)	R.....121	57.11.4123	12 kOhm	5%	
(20)	R.....122	57.11.4105	1 uF	5%	
(20)	R.....123	57.11.4105	1 uF	5%	
(20)	R.....124	57.11.4222	2.2 kOhm	5%	
(20)	R.....125	57.11.4222	2.2 kOhm	5%	
(20)	R.....126	57.11.4222	2.2 kOhm	5%	
(20)	R.....127	57.11.4272	2.7 kOhm	5%	
(20)	R.....128	57.11.4332	3.3 kOhm	5%	
(20)	R.....129	57.11.4331	330 kOhm	5%	
(20)	R.....130	57.11.4392	3.9 kOhm	5%	
(20)	R.....131	57.11.4102	1 kOhm	5%	
(20)	R.....132	57.11.4102	1 kOhm	5%	
(20)	R.....133	57.11.4102	1 kOhm	5%	
(20)	R.....134	57.11.4152	1.5 kOhm	5%	
(20)	R.....135	57.11.4123	12 kOhm	5%	
(20)	R.....136	57.11.4105	1 uF	5%	
(20)	R.....137	57.11.4105	1 uF	5%	
(20)	R.....138	57.11.4222	2.2 kOhm	5%	
(20)	R.....139	57.11.4222	2.2 kOhm	5%	
(20)	R.....140	57.11.4222	2.2 kOhm	5%	
(20)	R.....141	57.11.4272	2.7 kOhm	5%	
(20)	R.....142	57.11.4332	3.3 kOhm	5%	
(20)	R.....143	57.11.4331	330 kOhm	5%	
(20)	R.....144	57.11.4392	3.9 kOhm	5%	
(20)	R.....145	57.11.4102	1 kOhm	5%	
(20)	R.....146	57.11.4102	1 kOhm	5%	
(20)	R.....147	57.11.4102	1 kOhm	5%	
(20)	R.....148	57.11.4152	1.5 kOhm	5%	
(20)	R.....149	57.11.4123	12 kOhm	5%	
(20)	R.....150	57.11.4105	1 uF	5%	
(20)	R.....151	57.11.4105	1 uF	5%	
(20)	R.....152	57.11.4222	2.2 kOhm	5%	
(20)	R.....153	57.11.4222	2.2 kOhm	5%	
(20)	R.....154	57.11.4222	2.2 kOhm	5%	
(20)	R.....155	57.11.4272	2.7 kOhm	5%	
(20)	R.....156	57.11.4332	3.3 kOhm	5%	
(20)	R.....157	57.11.4331	330 kOhm	5%	
(20)	R.....158	57.11.4392	3.9 kOhm	5%	
(20)	R.....159	57.11.4102	1 kOhm	5%	
(20)	R.....160	57.11.4102	1 kOhm	5%	
(20)	R.....161	57.11.4102	1 kOhm	5%	
(20)	R.....162	57.11.4152	1.5 kOhm	5%	
(20)	R.....163	57.11.4123	12 kOhm	5%	
(20)	R.....164	57.11.4105	1 uF	5%	
(20)	R.....165	57.11.4105	1 uF	5%	
(20)	R.....166	57.11.4222	2.2 kOhm	5%	
(20)	R.....167	57.11.4222	2.2 kOhm	5%	
(20)	R.....168	57.11.4222	2.2 kOhm	5%	
(20)	R.....169	57.11.4272	2.7 kOhm	5%	
(20)	R.....170	57.11.4332	3.3 kOhm	5%	
(20)	R.....171	57.11.4331	330 kOhm	5%	
(20)	R.....172	57.11.4392	3.9 kOhm	5%	
(20)	R.....173	57.11.4102	1 kOhm	5%	
(20)	R.....174	57.11.4102	1 kOhm	5%	
(20)	R.....175	57.11.4102	1 kOhm	5%	
(20)	R.....176	57.11.4152	1.5 kOhm	5%	
(20)	R.....177	57.11.4123	12 kOhm	5%	
(20)	R.....178	57.11.4105	1 uF	5%	
(20)	R.....179	57.11.4105	1 uF	5%	
(20)	R.....180	57.11.4222	2.2 kOhm	5%	
(20)	R.....181	57.11.4222	2.2 kOhm	5%	
(20)	R.....182	57.11.4222	2.2 kOhm	5%	
(20)	R.....183	57.11.4272	2.7 kOhm	5%	
(20)	R.....184	57.11.4332	3.3 kOhm	5%	
(20)	R.....185	57.11.4331	330 kOhm	5%	
(20)	R.....186	57.11.4392	3.9 kOhm	5%	
(20)	R.....187	57.11.4102	1 kOhm	5%	
(20)	R.....188	57.11.4102	1 kOhm	5%	
(20)	R.....189	57.11.4102	1 kOhm	5%	
(20)	R.....190	57.11.4152	1.5 kOhm	5%	
(20)	R.....191	57.11.4123	12 kOhm	5%	
(20)	R.....192	57.11.4105	1 uF	5%	
(20)	R.....193	57.11.4105	1 uF	5%	
(20)	R.....194	57.11.4222	2.2 kOhm	5%	
(20)	R.....195	57.11.4222	2.2 kOhm	5%	
(20)	R.....196	57.11.4222	2.2 kOhm	5%	
(20)	R.....197	57.11.4272	2.7 kOhm	5%	
(20)	R.....198	57.11.4332	3.3 kOhm	5%	
(20)	R.....199	57.11.4331	330 kOhm	5%	
(20)	R.....200	57.11.4392	3.9 kOhm	5%	
(20)	R.....201	57.11.4102	1 kOhm	5%	
(20)	R.....202	57.11.4102	1 kOhm	5%	
(20)	R.....203	57.11.4102	1 kOhm	5%	
(20)	R.....204	57.11.4152	1.5 kOhm	5%	
(20)	R.....205	57.11.4123	12 kOhm	5%	
(20)	R.....206	57.11.4105	1 uF	5%	
(20)	R.....207	57.11.4105	1 uF	5%	
(20)	R.....208	57.11.4222	2.2 kOhm	5%	
(20)	R.....209	57.11.4222	2.2 kOhm	5%	
(20)	R.....210	57.11.4222	2.2 kOhm	5%	
(20)	R.....211	57.11.4272	2.7 kOhm	5%	
(20)	R.....212	57.11.4332	3.3 kOhm	5%	
(20)	R.....213	57.11.4331	330 kOhm	5%	
(20)	R.....214	57.11.4392	3.9 kOhm	5%	
(20)	R.....215	57.11.4102	1 kOhm	5%	
(20)	R.....216	57.11.4102	1 kOhm	5%	
(20)	R.....217	57.11.4102	1 kOhm	5%	
(20)	R.....218	57.11.4152	1.5 kOhm	5%	
(20)	R.....219	57.11.4123	12 kOhm	5%	
(20)	R.....220	57.11.4105	1 uF	5%	
(20)	R.....221	57.11.4105	1 uF	5%	
(20)	R.....222	57.11.4222	2.2 kOhm	5%	
(20)	R.....223	57.11.4222	2.2 kOhm	5%	
(20)	R.....224	57.11.4222	2.2 kOhm	5%	
(20)	R.....225	57.11.4272	2.7 kOhm	5%	
(20)	R.....226	57.11.4332	3.3 kOhm	5%	
(20)	R.....227	57.11.4331	330 kOhm	5%	
(20)	R.....228	57.11.4392	3.9 kOhm	5%	
(20)	R.....229	57.11.4102	1 kOhm	5%	
(20)	R.....230	57.11.4102	1 kOhm	5%	
(20)	R.....231	57.11.4102	1 kOhm	5%	
(20)	R.....232	57.11			

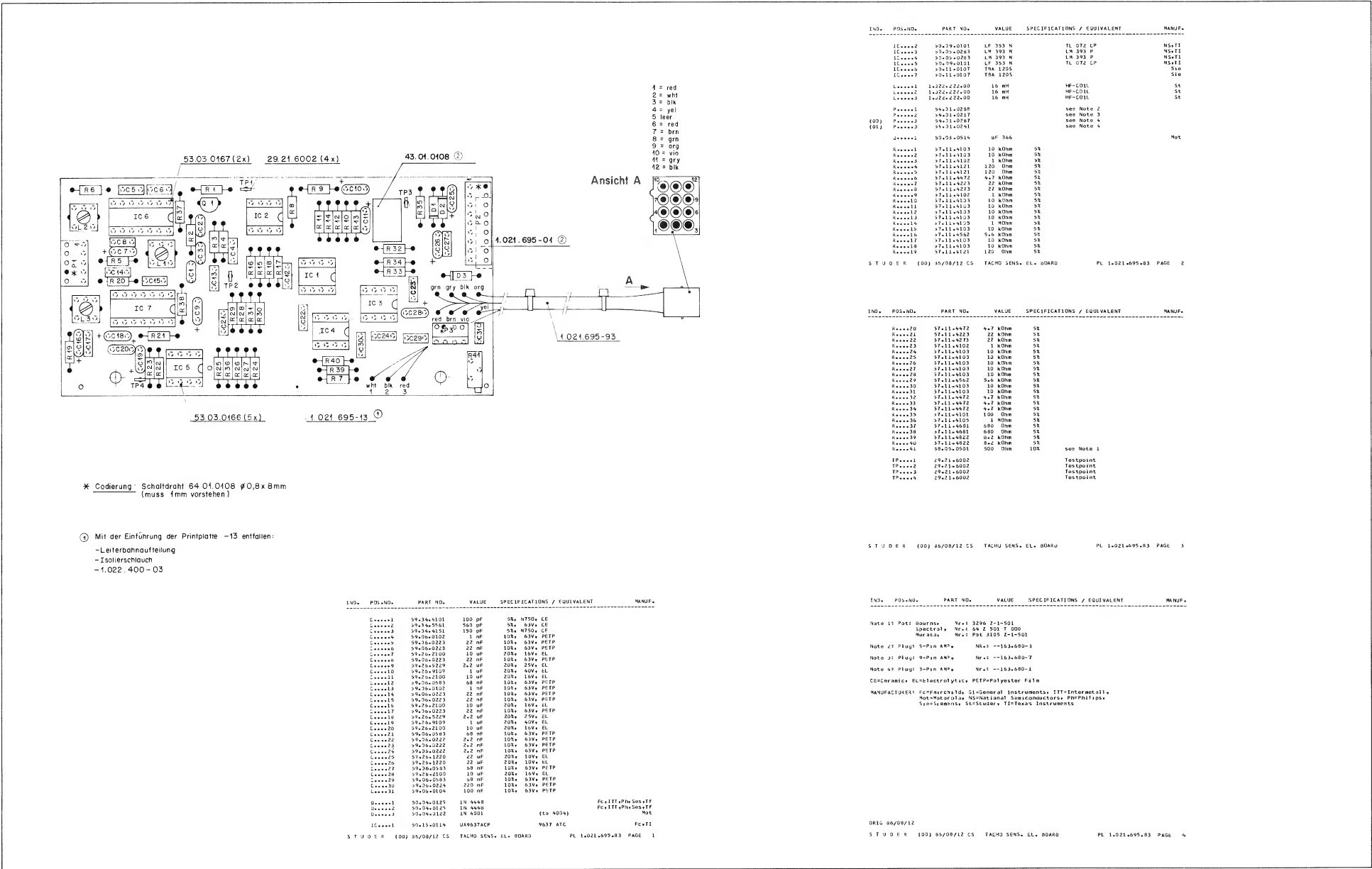
Block Diagram Tacho Sensor Electronics PCB "ESE" 1.021.695



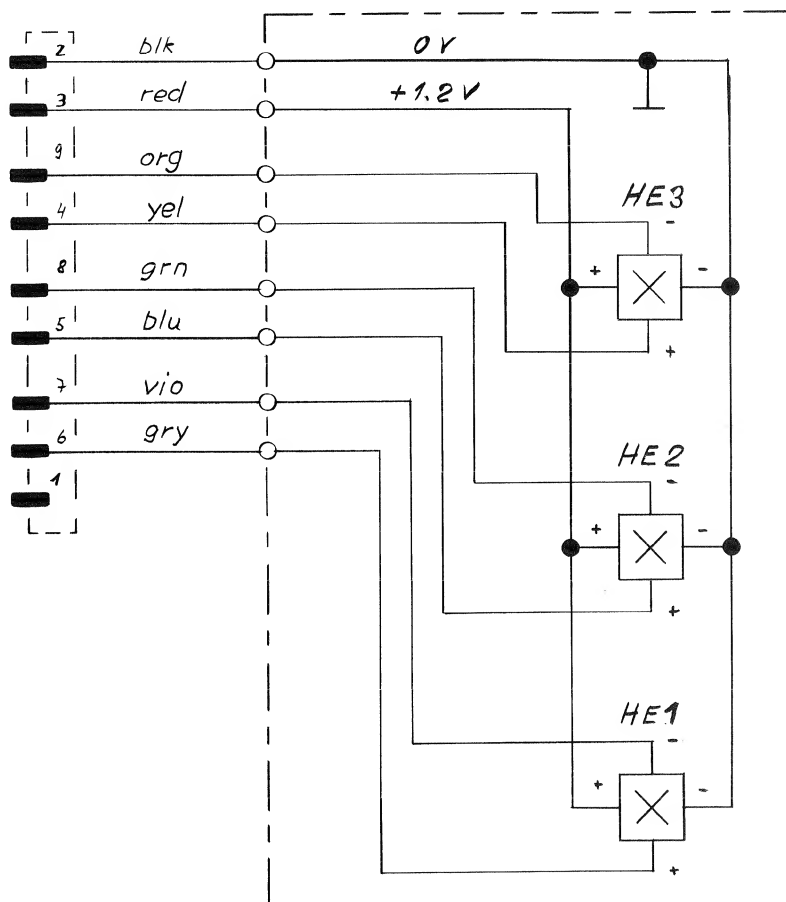


① 4.12.84 Buk	② 1208.16 C5	③ 27.10.86 C5	④ . . .
A 820 Tape Transport Section			
Tacho Sensor Electronics PCB			SC 1.021.695.83
STUDER			
PAGE 1 OF 1			

Tacho Sensor Electronics PCB 1.021.695.83

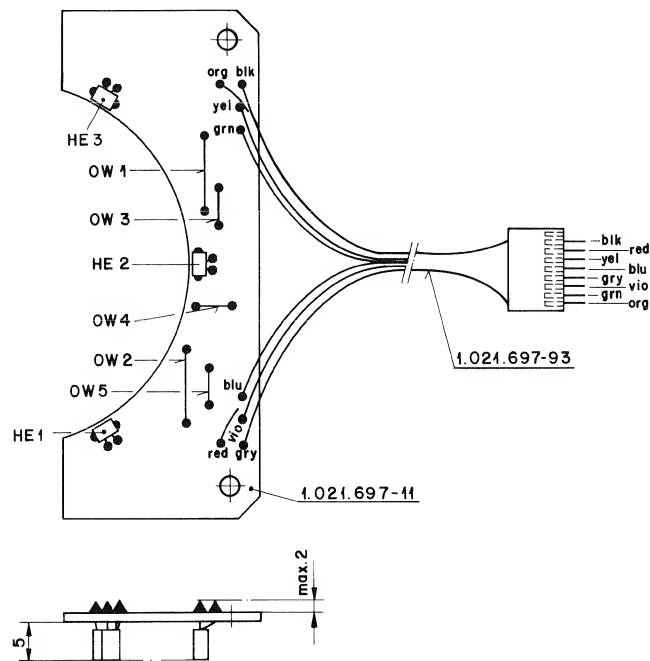


Hall Sensor PCB 1.021.697.00

To Tacho Sensor Electronic PCB

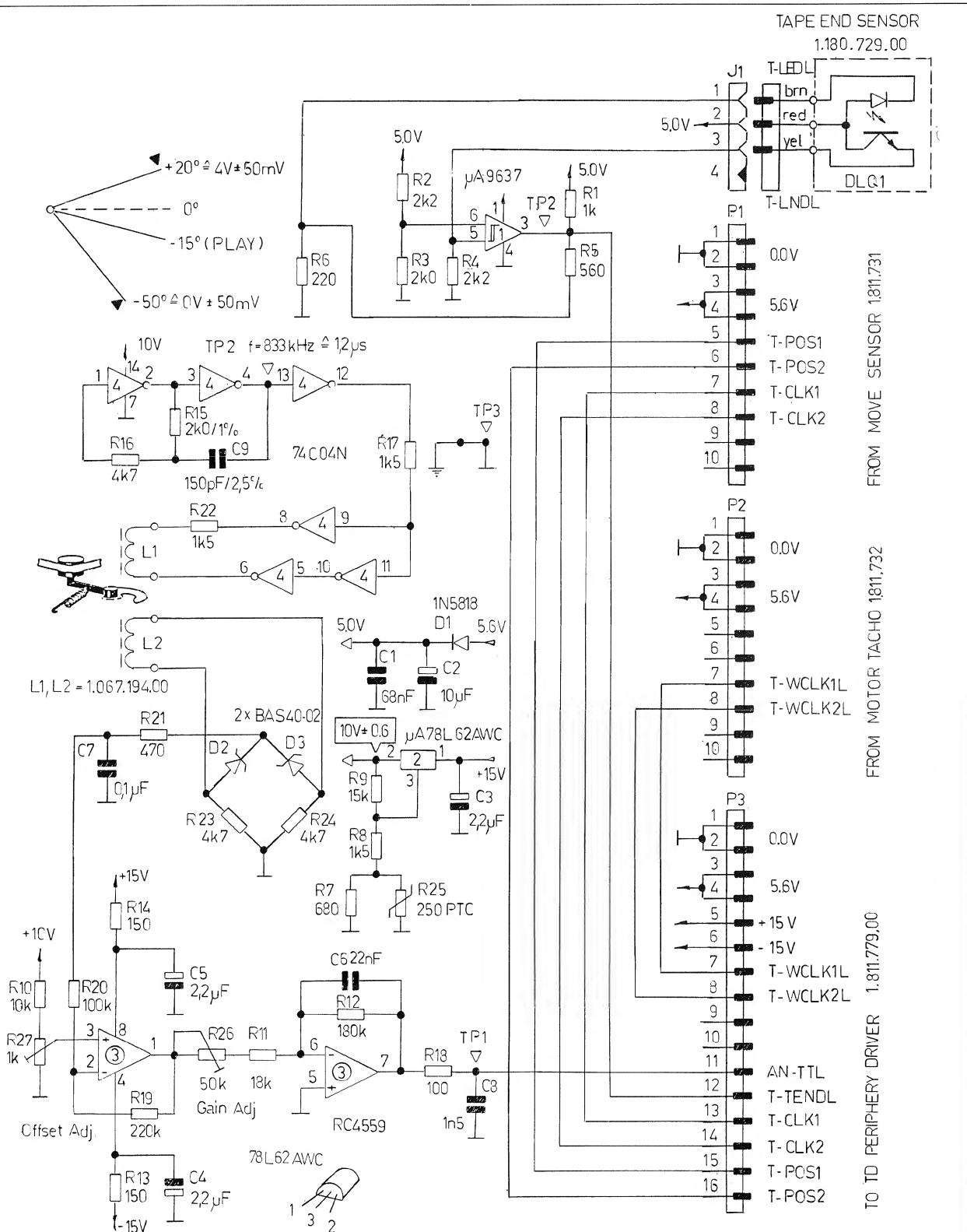
03.12.84 BUR	...	...	...	...
	A 820 Tape Transport Section			PAGE 1 OF 1
STUDER	Hall Sensor PCB			SC 1.021.697.00

Hall Sensor PCB 1.021.697.00



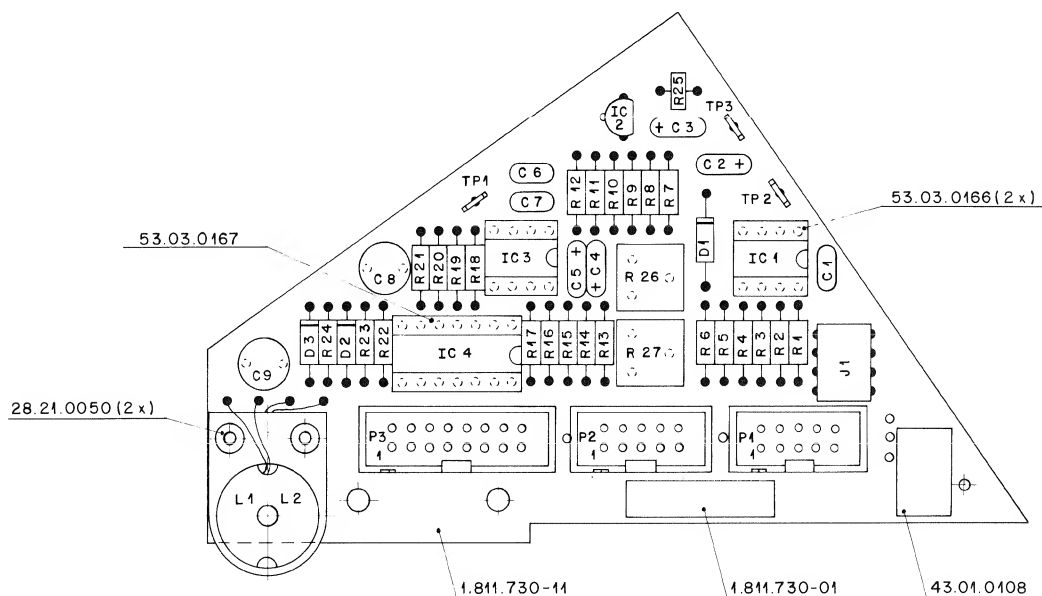
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	HE....1	1.010.050.50		IC 50.99.0170 GEBNEN	
(01)	HE....2	1.010.050.50		IC 50.99.0170 GEBNEN	
(01)	HE....3	1.010.050.50		IC 50.99.0170 GEBNEN	
	OW....1	1.010.324.64	13.2 mm	Wire bridge	
	OW....2	1.010.324.64	10.2 mm	Wire bridge	
	OW....3	1.010.321.64	5.0 mm	Wire bridge	
	OW....4	1.010.321.64	5.0 mm	Wire bridge	
	OW....5	1.010.321.64	5.0 mm	Wire bridge	

Tape Tension Sensor Left 1.811.730.00



24.06.86	HAESSIG	A 812	SC	1.811.730.00
STUDER		TAPE TENSION SENSOR LEFT		PAGE 1 OF 1

Tape Tension Sensor Left 1.811.730.00



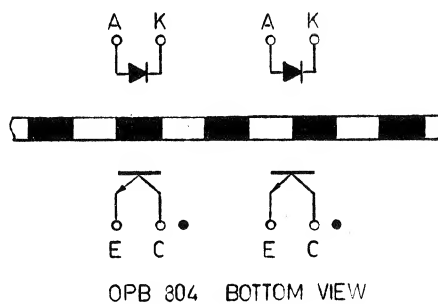
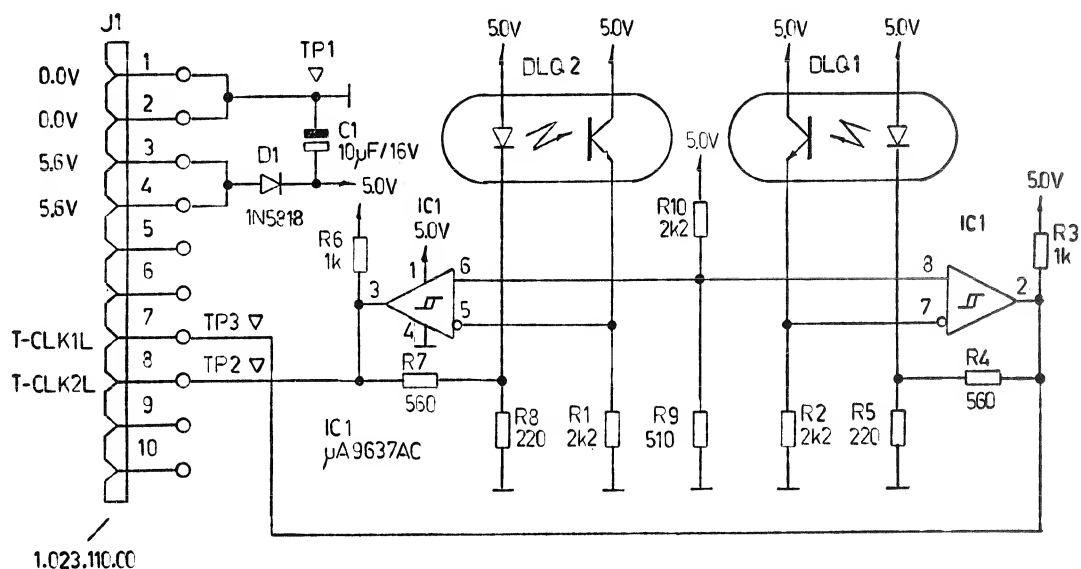
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.06.0583	68 nF	10%, PETP		Note 1 - connector:					
C.....2		59.26.2100	10 uF	20%, 16V, Sal	Ph+Ri	10 contacts, farnachi Nr.					
C.....3		59.26.5229	2.2 uF	20%, 25V, Sal	Ph+Ri	Bumdy Nr.					
C.....4		59.26.5229	2.2 uF	20%, 25V, Sal	Ph+Ri	FAP-10-08-40 55					
C.....5		59.26.5229	2.2 uF	20%, 25V, Sal	Ph+Ri	BPH 9 8 10 B 00 GS					
C.....6		59.06.0223	22 nF	10%, PETP		Note 2 - connector:					
C.....7		59.06.0104	100 nF	10%, PETP		16 contacts, farnachi Nr.					
C.....8		59.09.2152	1.5 nF	2.5%, PP		Bumdy Nr.					
C.....9		59.09.2151	150 pF	2.5%, PP		FAP-16-08-40 55					
D.....1		50.04.0512	1N 5818	1N 5818	Mot	Note 3 - Potentiometer					
D.....2		50.04.0127	BAT 42	BAT 85, BAS 40-02	Ph+St+Tho	Allen Bradley Nr. E 2B 503					
D.....3		50.04.0127	BAT 42	BAT 85, BAS 40-02	Ph+St+Tho	Sourns Nr. 3386 F-1-503					
IC.....1		50.15.0114	ua963TACP	9637 ATC	Fc+Ti	Matsushita Nr. PUT 3104 F-1- 0503					
IC.....2		50.10.0101	ua78L62AMC	uPC 4559 (slew rate min. 1.5 V/us)	Ra+NEC	Note 4 - Potentiometer					
IC.....3		50.09.0107	RC 4559 NB		NS	Allen Bradley Nr. E 2B 102					
IC.....4		50.99.0167	74 C 04 N			Sourns Nr. 3386 F-1-102					
J.....1		54.31.0304	4 cont.	AMP Nr. 163.683-2		Murata Nr. POT 3104 F-1-102					
L.....1		1.010.125.00		Sensor coil	St	Spectrol Nr. 63 M 503 T 010					
L.....2		1.810.125.00		Sensor coil	St	PETP=Polyesterfilm, PP=Polypropylene, Sal=Solid aluminium					
P.....1		54.14.2001		10 contacts, see note 1		MANUFACTURER: Fc=Fairchild, Mot=Motorola, NEC=Nippon Electric Corporation,					
P.....2		54.14.2001		10 contacts, see note 1		NS=National Semiconductors, Ph=Philips, Ra=Raytheon,					
P.....3		54.14.2002		16 contacts, see note 2		Ri=Rifa, Si=Siemens, St=Studer, Tho=Thomson-CSF,					
R.....1		57.11.4102	1 kOhm	2%		Ti=Texas Instruments.					
R.....2		57.11.4222	2.2 kOhm	2%		DRIG 86/06/24					
R.....3		57.11.3202	2 kOhm	1%							
R.....4		57.11.4222	2.2 kOhm	2%							
R.....5		57.11.4561	560 Ohm	2%							
R.....6		57.11.4221	220 Ohm	2%							
R.....7		57.11.4601	680 Ohm	2%							
R.....8		57.11.4152	1.5 kOhm	2%							
R.....9		57.11.4153	15 kOhm	2%							

S T U D E R (00) 86/06/24 PB TAPE TENSION SENSOR, LEFT PL 1.811.730.00 PAGE 1 S T U D E R (00) 86/06/24 PB TAPE TENSION SENSOR, LEFT PL 1.811.730.00 PAGE 3

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....10		57.11.4103	10 kOhm	2%	
R.....11		57.11.4183	18 kOhm	2%	
R.....12		57.11.4184	180 kOhm	2%	
R.....13		57.11.4151	150 Ohm	2%	
R.....14		57.11.4151	150 Ohm	2%	
R.....15		57.11.3202	2 kOhm	1%	
R.....16		57.11.4472	4.7 kOhm	2%	
R.....17		57.11.4152	1.5 kOhm	2%	
R.....18		57.11.4101	100 Ohm	2%	
R.....19		57.11.4224	220 kOhm	2%	
R.....20		57.11.4104	100 kOhm	2%	
R.....21		57.11.4671	470 Ohm	2%	
R.....22		57.11.4152	1.5 kOhm	2%	
R.....23		57.11.4472	4.7 kOhm	2%	
R.....24		57.11.4672	4.7 kOhm	2%	
R.....25		57.99.0216	250 Ohm	PTC-Resistor, Philips Nr. 2322 660 91001	
R.....26		58.01.8503	50 kOhm	10% see note 3	
R.....27		58.01.8102	1 kOhm	10% see note 4	
TP.....1		54.02.0320		Test Point	
TP.....2		54.02.0320		Test Point	
TP.....3		54.02.0320		Test Point	

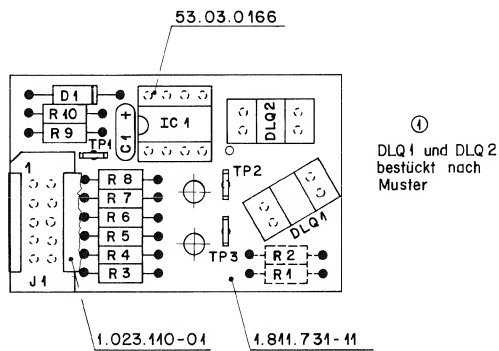
S T U D E R (00) 86/06/24 PB TAPE TENSION SENSOR, LEFT PL 1.811.730.00 PAGE 2

Tape Move Sensor PCB 1.811.731.00



24.06.86	HAESSIG	A812			
STUDER	TAPE MOVE SENSOR PCB			SC 1.811.731.00	PAGE 1 OF 1

Tape Move Sensor PCB 1.811.731.00



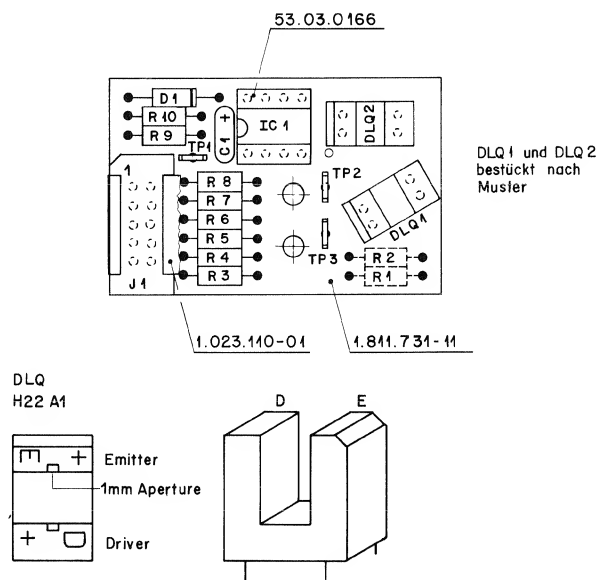
IND.	POS./NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.26.2100	10 uF	20%, 16V, Sal	Ph+Ri
D.....1		50.04.0512	1N 5818	1N 5819	Mot
DLQ.....1		50.04.2128	DPB 804	MST 804, ISTS 804	GI, Iso+Up
DLQ.....2		50.04.2128	DPB 804	MST 804, ISTS 804	GI, Iso+Up
IC.....1		50.15.0114	uA9637ACP	9637 ATC	Fc, TI
J.....1		1.023.110.01	10 cont.	Flat cable	St
R.....1		57.11.4222	2.2 kOhm	2%	
R.....2		57.11.4222	2.2 kOhm	2%	
R.....3		57.11.4102	1 kOhm	2%	
R.....4		57.11.4561	560 Ohm	2%	
R.....5		57.11.4221	220 Ohm	2%	
R.....6		57.11.4102	1 kOhm	2%	
R.....7		57.11.4561	560 Ohm	2%	
R.....8		57.11.4221	220 Ohm	2%	
R.....9		57.11.3511	510 Ohm	1%	
R.....10		57.11.4222	2.2 kOhm	2%	
TP.....1		54.02.0320		Test point	
TP.....2		54.02.0320		Test point	
TP.....3		54.02.0320		Test point	

PCTP=Polyesterfilm, PP=Polypropylene, Sal=Solid aluminium

MANUFACTURER: Fc=Fairchild, GI=General Instruments, Iso=Isocom, Mot=Motorola, Op=Optron, Ph=Philips, Ri=Rifa, St=Studer, TI=Texas Instruments.

DRIG 86/06/24

Tape Move Sensor PCB 1.811.731.81



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59-26-2100	10 uF	20%, 16V, Sal	Ph+Ri
D.....1		50-34-0512	1N 5818	1N 5819	Mot
DLQ...1		50-04-2128	H22 A1		GE
DLQ...2		50-04-2128	H22 A1		GE
IC.....1		50-15-0114	uA9637ALP	9637 ATC	Fc+TI
J.....1		1-023-110-01	10 cont.	Flat cable	St
R.....1		57-11-4222	2-2 kOhm	2%	
R.....2		57-11-4222	2-2 kOhm	2%	
R.....3		57-11-4102	1 kOhm	2%	
R.....4		57-11-4561	560 Ohm	2%	
R.....5		57-11-4221	220 Ohm	2%	
R.....6		57-11-4102	1 kOhm	2%	
R.....7		57-11-4561	560 Ohm	2%	
R.....8		57-11-4221	220 Ohm	2%	
R.....9		57-11-3511	510 Ohm	1%	
R.....10		57-11-4222	2-2 kOhm	2%	
TP.....1		54-02-0320		Test point	
TP.....2		54-02-0320		Test point	
TP.....3		54-02-0320		Test point	

PETP=Polyesterfilm, PP=Polypropylene, Sal=Solid aluminium

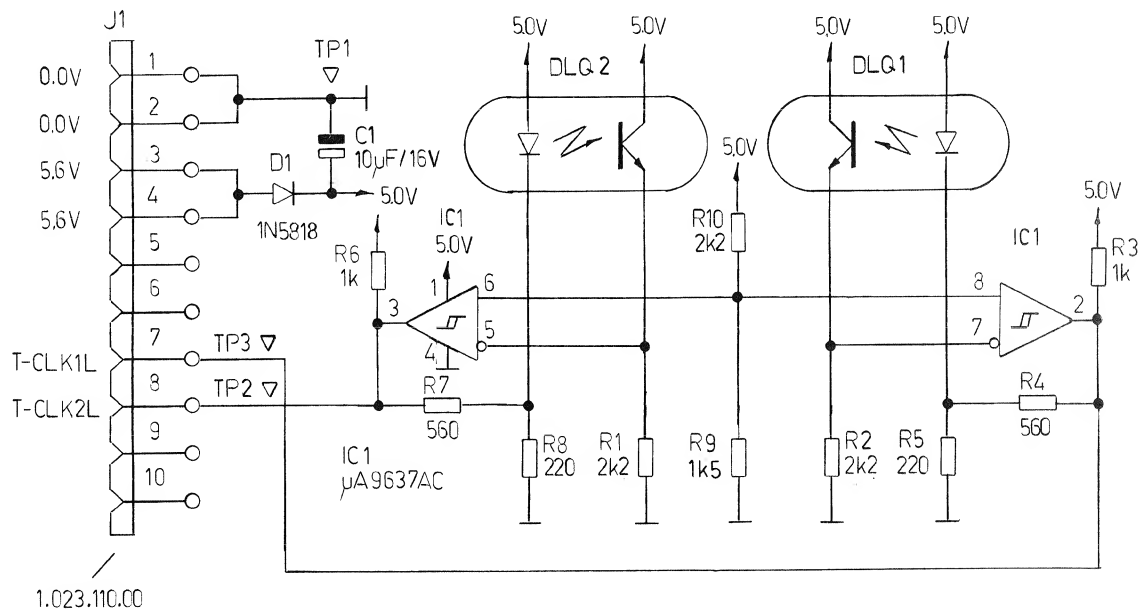
MANUFACTURER: Fc=Fairchild, GE=General Electric, Mot=Motorola
Ph=Philips, Ri=Rifa, St=Studer,
TI=Texas Instruments.

ORIG 87/03/18

S T U D E R (00) d7/03/18 RD TAPE MOVE SENSOR

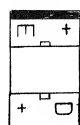
PL 1.811.731.81 PAGE 1

Tape Move Sensor PCB 1.811.731.82



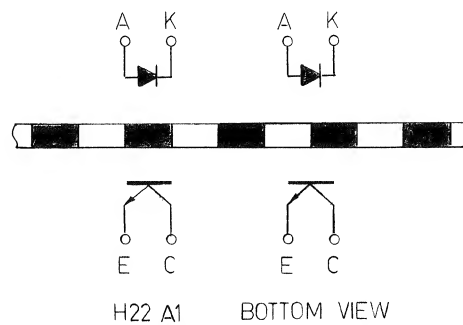
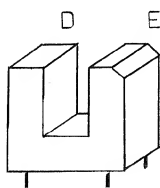
H22A1

1mm Aperture



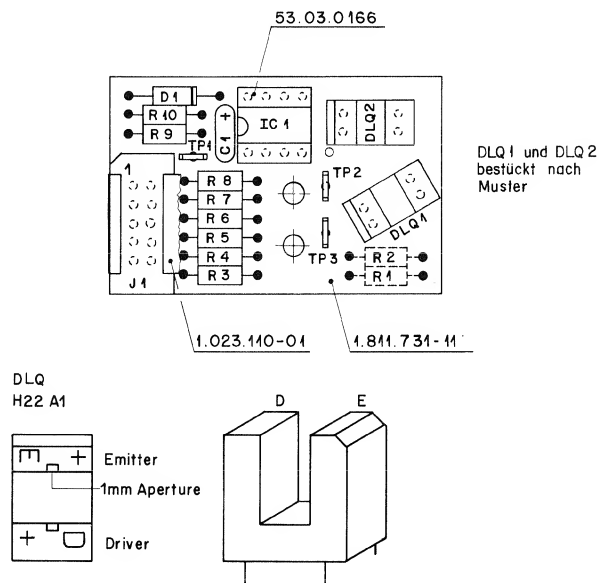
Emitter

Driver



06 0788 HAESSIG	A812			
STUDER	TAPE MOVE SENSOR PCB	SC	1.811.731.82	PAGE 1 OF 1

Tape Move Sensor PCB 1.811.731.82



IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.26.2100	10 uF	20%, 16V, Sal	Ph,Ri
D.....1		50.34.0512	1N 5818	1N 5819	Mot
DLQ....1		50.34.2128	H22 A1		GE
DLQ....2		50.34.2128	H22 A1		GE
IC.....1		50.15.0114	uA9637ACP	9637 ATC	Fc,Ti
J.....1		1.023.110.01	10 cont.	Flat cable	St
R.....1		57.11.3222	2.2 kOhm	2%	
R.....2		57.11.3222	2.2 kOhm	2%	
R.....3		57.11.3102	1 kOhm	2%	
R.....4		57.11.3561	560 Ohm	2%	
R.....5		57.11.3561	220 Ohm	2%	
R.....6		57.11.3102	1 kOhm	2%	
R.....7		57.11.3561	560 Ohm	2%	
R.....8		57.11.3221	220 Ohm	2%	
R.....9		57.11.3152	1.5 kOhm	2%	
R.....10		57.11.3222	2.2 kOhm	2%	
TP.....1		54.02.0320		Test point	
TP.....2		54.02.0320		Test point	
TP.....3		54.02.0320		Test point	

PETP=Polyesterfilm, PP=Polypropylene, Sal=Solid aluminium

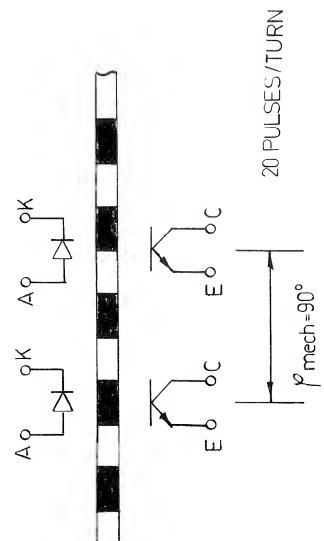
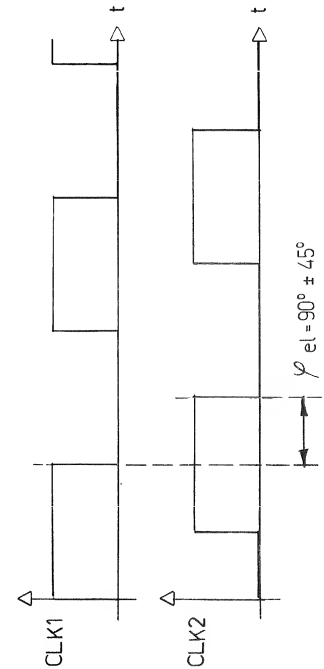
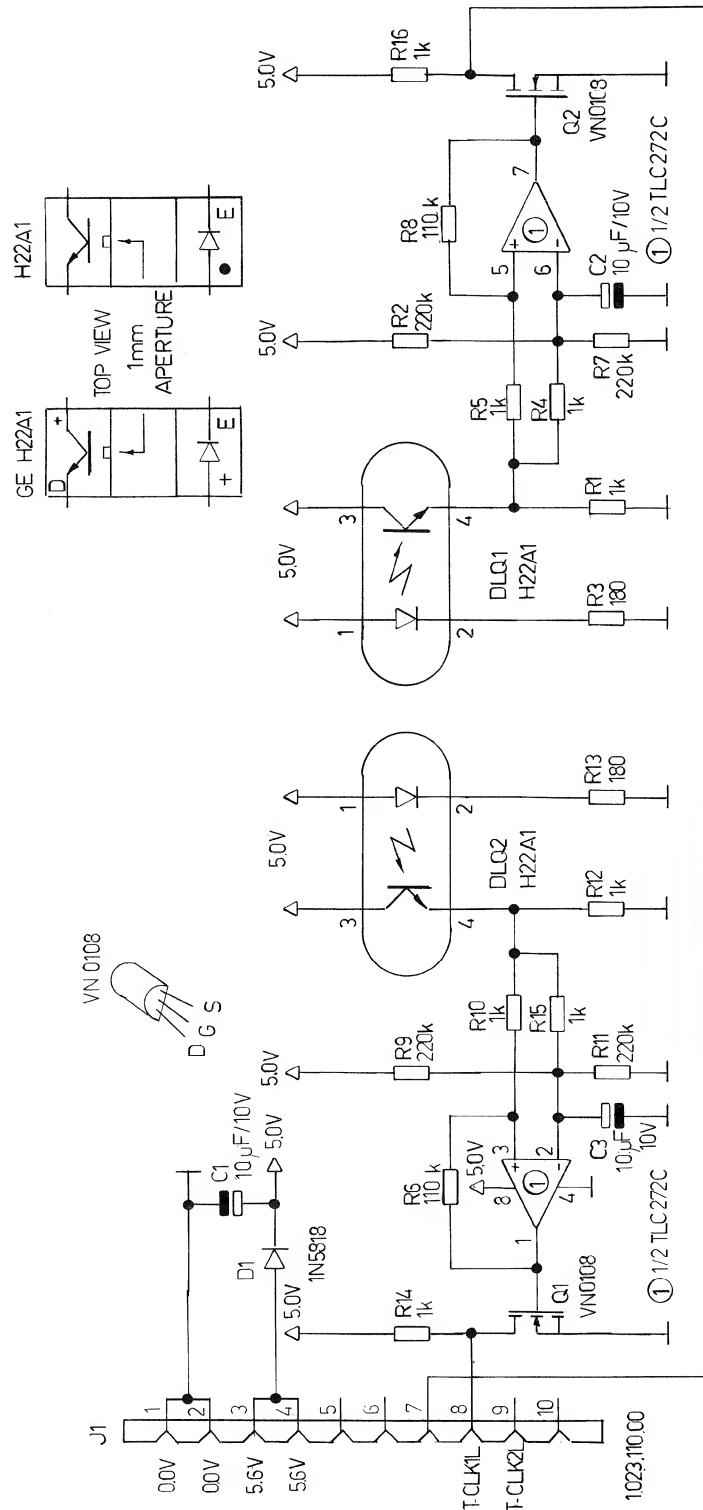
MANUFACTURER: Fc=Fairchild, Ge=General Electric, Mot=Motorola
Ph=Philips, Ri=Kifa, St=Studer,
Ti=Texas Instruments.

ORIG 88/07/06

S T U D E R (00) 88/07/06 PZ TAPE MOVE SENSOR

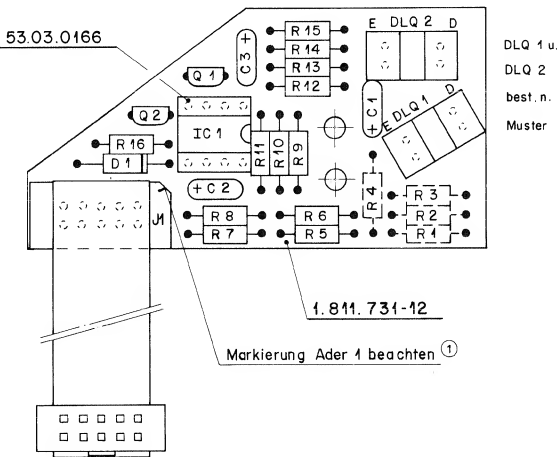
PL 1.811.731.82 PAGE 1

Tape Move Sensor 1.811.731.83



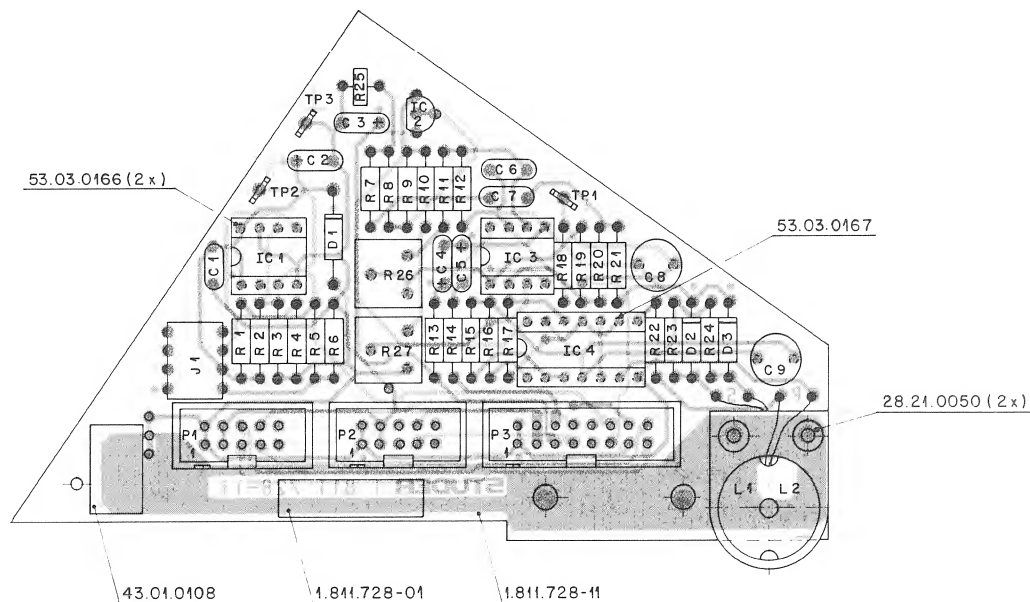
① 12.08.88 ZOLLER	① 14.03.89 ZOLLER	○ . .	○ . .	○ . .
STUDER TAPE MOVE SENSOR				SC 1.811.731.83
PAGE 1 OF 1				

Tape Move Sensor 1.811.731.83



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
		C.....1	59.26.2100	10 uF	20%, 16V, Sal	Ph+Ri					
		C.....2	59.26.2100	10 uF	20%, 16V, Sal	Ph+Ri					
		C.....3	59.26.2100	10 uF	20%, 16V, Sal	Ph+Ri					
		U.....1	50.04.0512	1N 5818	1N 5819	Mot					
		DLQ.....1	50.04.2128	M22 A1	GE,Isocom						
		DLQ.....2	50.04.2128	M22 A1	GE,Isocom						
(00)		IC.....1	50.05.0286	LM 358 N	LM 358 P	NS,Mot,SGS,Ti					
(01)		IC.....1	50.05.0122	TLC 272 C	TS 272 CN	SGS,Ti					
		J.....1	1.023.110.01	10 cont.	Flat cable	St					
		Q.....1	50.03.1505	ZVN 0108A	VN 0808M	Fe+Six					
		Q.....2	50.03.1505	ZVN 0108A	VN 0808M	Fe+Six					
		R.....1	57.11.3102	1 kOhm	2%						
		R.....2	57.11.3224	220 kOhm	2%						
		R.....3	57.11.3151	180 Ohm	2%						
		R.....4	57.11.3102	1 kOhm	2%						
		R.....5	57.11.3102	1 kOhm	2%						
		R.....6	57.11.3114	110 kOhm	2%						
		R.....7	57.11.3224	220 kOhm	2%						
		R.....8	57.11.3114	110 kOhm	2%						
		R.....9	57.11.3224	220 kOhm	2%						
		R.....10	57.11.3102	1 kOhm	2%						
		R.....11	57.11.3224	220 kOhm	2%						
		R.....12	57.11.3102	1 kOhm	2%						
		R.....13	57.11.3151	180 Ohm	2%						
		R.....14	57.11.3102	1 kOhm	2%						
		R.....15	57.11.3102	1 kOhm	2%						
		R.....16	57.11.3102	1 kOhm	2%						

Tape Tension Sensor Right 1.811.728.00



IND.	PDS-NR.	PART NR.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PDS-NR.	PART NR.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.06.0683		68 nF	10%, PETP		Note 1 - connector:					
C.....2	59.26.2100		10 uF	20%, 16V, Sal	Ph,Ri	10 contacts,	Yamaichi Nr.	FAP-10-08-40 SS			
C.....3	59.26.5229		2.2 uF	20%, 25V, Sal	Ph,Ri	Burndy Nr.		BPH 9 B 10 B 00 GS			
C.....4	59.26.5229		2.2 uF	20%, 25V, Sal	Ph,Ri						
C.....5	59.26.5229		2.2 uF	20%, 25V, Sal	Ph,Ri						
C.....6	59.26.0223		22 nF	10%, PETP		Note 2 - connector:					
C.....7	59.08.0104		100 nF	10%, PETP		16 contacts,	Yamaichi Nr.	FAP-16-08-40 SS			
C.....8	59.35.2152		1.5 nF	2.5%, PP		Burndy Nr.		BPH 9 B 16 B 00 GS			
C.....9	59.35.2151		150 pF	2.5%, PP							
U.....1	50.34.0512		1N 5819		Not						
U.....2	50.34.0127		BAT 42	BAT 85, BAS 40-02	Ph,Sie,Tho						
U.....3	50.04.0127		BAT 42	BAT 85, BAS 40-02	Ph,Sie,Tho						
IC.....1	50.15.0114		uA9637ACP	9637 ATC	Fc, TI	Note 3 - Potentiometer					
IC.....2	50.10.0101		uA78L24WLC		Fc	Allan Bradley Nr.	E 28 503				
IC.....3	50.09.0107		RC 4559 Nd	uPC 4559 (slew rate min. 1.5 V/us)	Ra, NEC	3ourns Nr.	3386 F-1-503				
IC.....4	50.99.0157		74 C 04 N		NS	Matsushita Nr.	POT 3104 F-1- 0503				
J.....1	54.01.0304		4 cont.	AMP Nr. 163.683-2		Spectrol Nr.	63 M 503 T 010				
L.....1	1.810.125.00		Sensor coil		St						
L.....2	1.810.125.00		Sensor coil		St						
P.....1	54.14.2001		10 contacts, see note 1			Note 4 - Potentiometer					
P.....2	54.14.2001		10 contacts, see note 1			Allan Bradley Nr.	E 28 102				
P.....3	54.14.2002		10 contacts, see note 2			3ourns Nr.	3386 F-1-102				
R.....1	57.11.4102		1 kOhm	2%		Murata Nr.	POT 3104 F-1-102				
R.....2	57.11.4222		2.2 kOhm	2%		Spectrol Nr.	63 M 102 T 010				
R.....3	57.11.3202		2 kOhm	1%							
R.....4	57.11.4222		2.2 kOhm	2%							
R.....5	57.11.4561		560 Ohm	2%							
R.....6	57.11.4221		220 Ohm	2%							
R.....7	57.11.4581		680 Ohm	2%							
R.....8	57.11.4152		1.5 kOhm	2%							
R.....9	57.11.4153		15 kOhm	2%							

S T U D E R (00) 86/06/24 Pb TAPE TENSION SENSOR, RIGHT PL 1.811.728.00 PAGE 1 S T U D E R (00) 86/06/24 Pb TAPE TENSION SENSOR, RIGHT PL 1.811.728.00 PAGE 3

IND.	PDS-NR.	PART NR.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....10	57.11.4103		10 kOhm	2%	
R.....11	57.11.4103		18 kOhm	2%	
R.....12	57.11.4184		180 kOhm	2%	
R.....13	57.11.4151		150 Ohm	2%	
R.....14	57.11.4151		150 Ohm	2%	
R.....15	57.11.3202		2 kOhm	1%	
R.....16	57.11.4472		4.7 kOhm	2%	
R.....17	57.11.4152		1.5 kOhm	2%	
R.....18	57.11.4101		100 Ohm	2%	
R.....19	57.11.4224		220 kOhm	2%	
R.....20	57.11.4104		100 kOhm	2%	
R.....21	57.11.4471		470 Ohm	2%	
R.....22	57.11.4152		1.5 kOhm	2%	
R.....23	57.11.4472		4.7 kOhm	2%	
R.....24	57.11.4472		4.7 kOhm	2%	
R.....25	57.99.0216		250 Ohm	10%	PEC-Resistor, Philips Nr. 2322 660 91001
R.....26	58.01.8503		50 kOhm	10%	see note 3
R.....27	58.01.8102		1 kOhm	10%	see note 4
TP.....1	54.02.0320			Test Point	
TP.....2	54.02.0320			Test Point	
TP.....3	54.02.0320			Test Point	

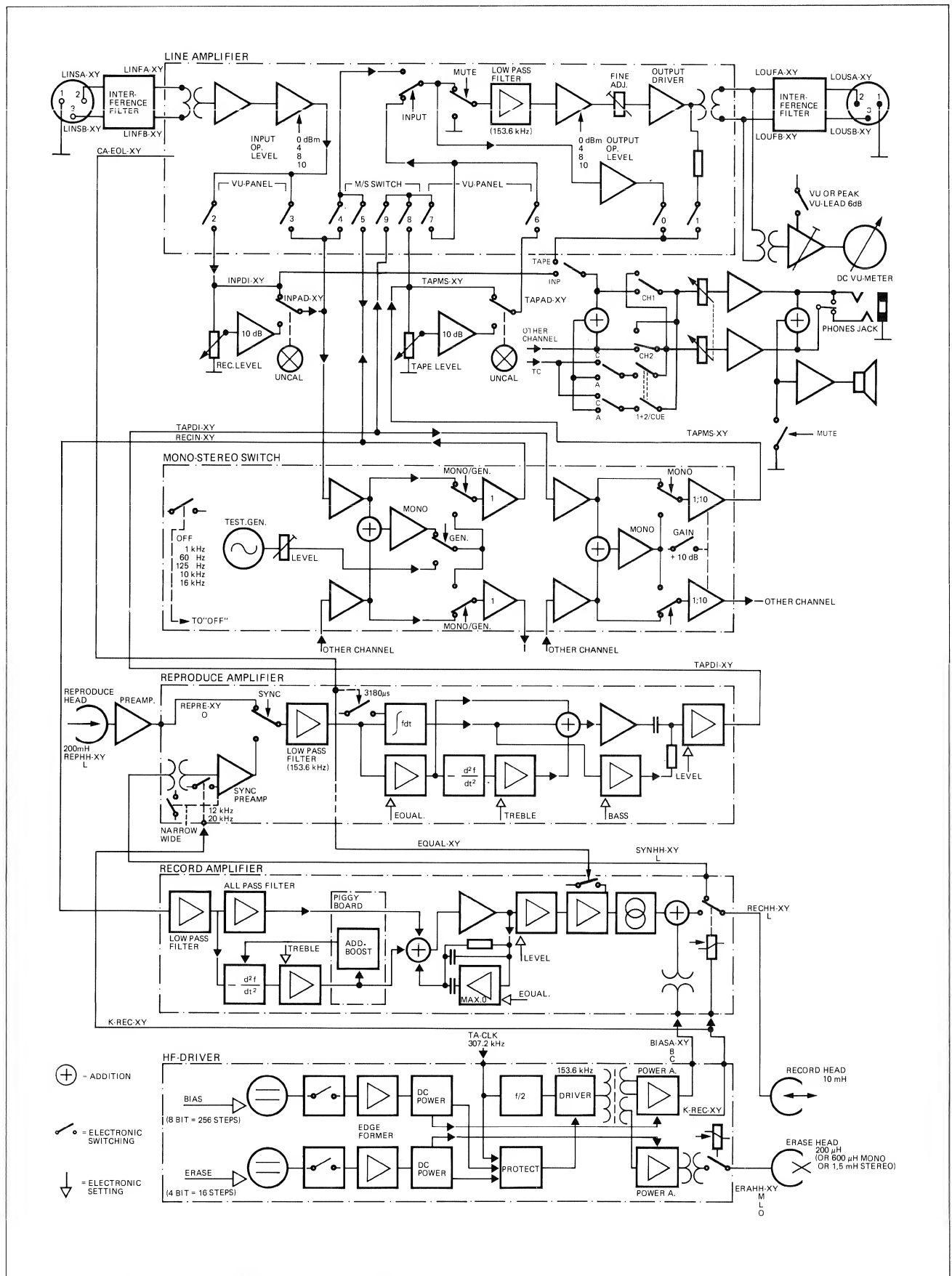
S T U D E R (00) 86/06/24 Pb TAPE TENSION SENSOR, RIGHT PL 1.811.728.00 PAGE 2

7. Audio Section

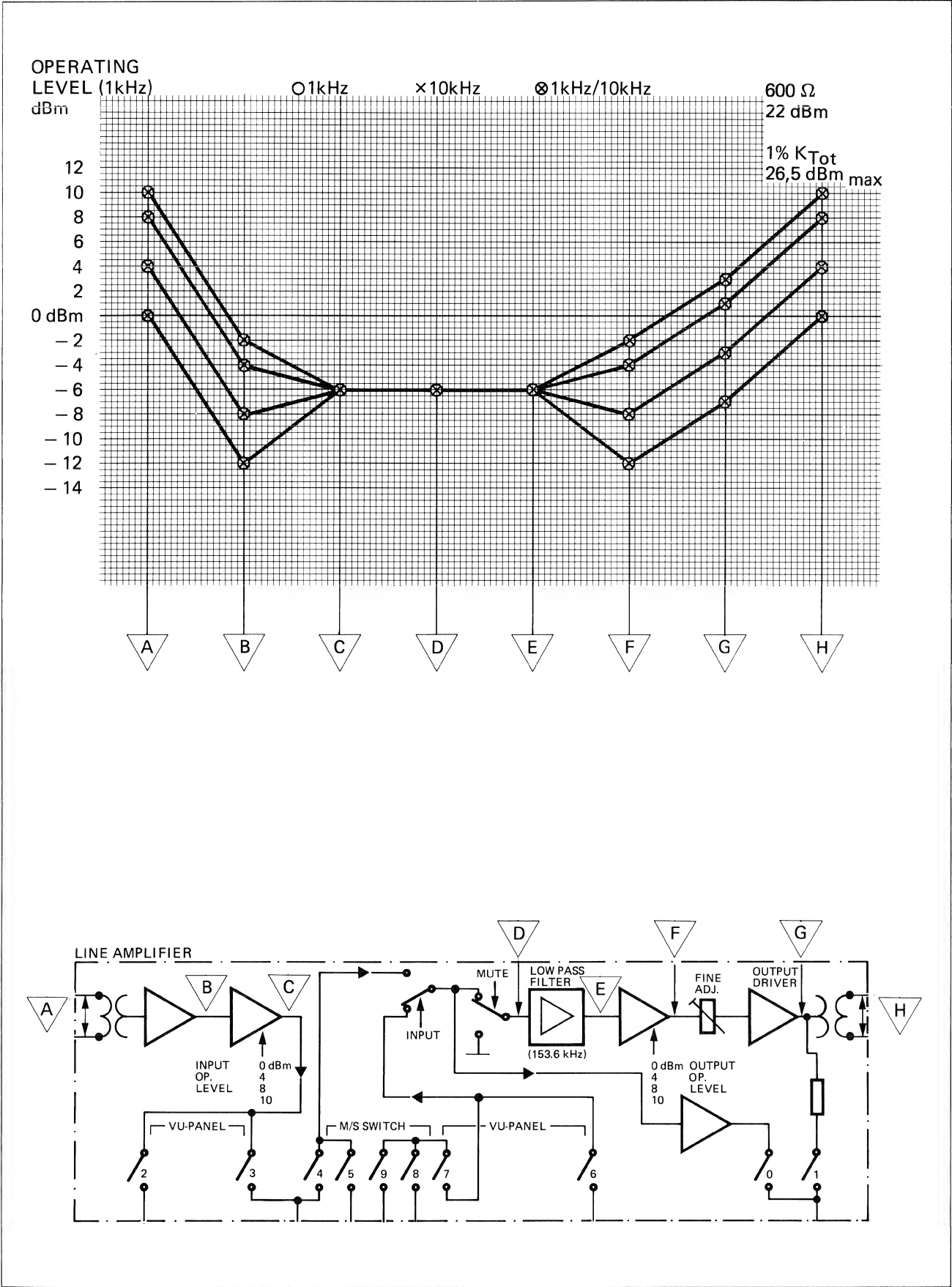
ESE = Electrostatically sensitive assembly

Contents		GRP/ELM	Page
Audio Block Diagram A812			7/1
Level Diagrams, Line Amplifier			7/2
Line Amplifier	1.820.714-83	GRP20/ELM52 + 57	7/3
Line Amplifier	1.820.714-84	GRP20/ELM52 + 57	7/5
Line Amp. Trafoless	1.820.715-81	GRP20/ELM52 + 57	7/9
Line Amp. Trafoless	1.820.715-82	GRP20/ELM52 + 57	7/11
Line Amp. Trafoless	1.820.715-83	GRP20/ELM52 + 57	7/13
Line Output Amplifier	1.820.862.00		7/15
Interference Filter	1.820.749-00	GPR40 + 41	7/17
Reproduce Preamplifier 1CH	1.810.710-81	GRP90/ELM2	7/19
Reproduce Preamplifier 2CH	1.810.711-81	GRP90/ELM2	7/21
Reproduce Preamplifier 1CH	1.810.714-00	GRP90/ELM2	7/23
Reproduce Preamplifier 2CH	1.810.717-00	GRP90/ELM2	7/25
Level Diagrams, Reproduce Amplifier			7/27
Reproduce Amplifier	1.820.710-83	GRP20/ELM51 + 56	7/29
Reproduce Amplifier	1.820.710-84	GRP20/ELM51 + 56	7/31
Reproduce Amplifier	1.820.710-85	GRP20/ELM51 + 56	7/33
Level Diagrams, Record Amplifier			7/35
Record Amplifier	1.820.712-81	GRP20/ELM50 + 55	7/37
Record Amplifier	1.820.712-82	GRP20/ELM50 + 55	7/39
Adaption Board	1.820.740.00/81		7/41
Adaption Board	1.820.740.00		7/42
HF-Driver	1.820.713-00	GRP20/ELM49 + 54	7/43
Erase Head Connector			7/45
Erase Head Connector			7/46
Mono Stereo Switch	1.820.720-00	GRP20/ELM53	7/47
Mono Stereo Switch with Test Gen.	1.820.724-00	GRP20/ELM53	7/49
Noise Reduction System Control	1.820.763-81	GRP 45	7/51
Block Diagram Time-Code General	1.820.721		7/53
Time Code Read-Write Unit	1.820.721-84	GRP20/ELM47	7/55
Time Code Read-Write Unit	1.820.721-85	GRP20/ELM47	7/57
Time Code Read-Write Unit	1.820.721-85	GRP20/ELM47	7/60
Code Delay Unit	1.820.722-81	GRP20/ELM48	7/61
Distribution Board	1.820.794.00	GRP 70	7/63
VU-Meter Amplifier	1.820.730-81	GRP70/ELM5,6,8,10	7/65
Calibration Board	1.820.731.00		7/67
Monitor Control Unit	1.820.580-00	GRP 71	7/69
Monitor Control Unit	1.820.235-00	GRP 28	7/69

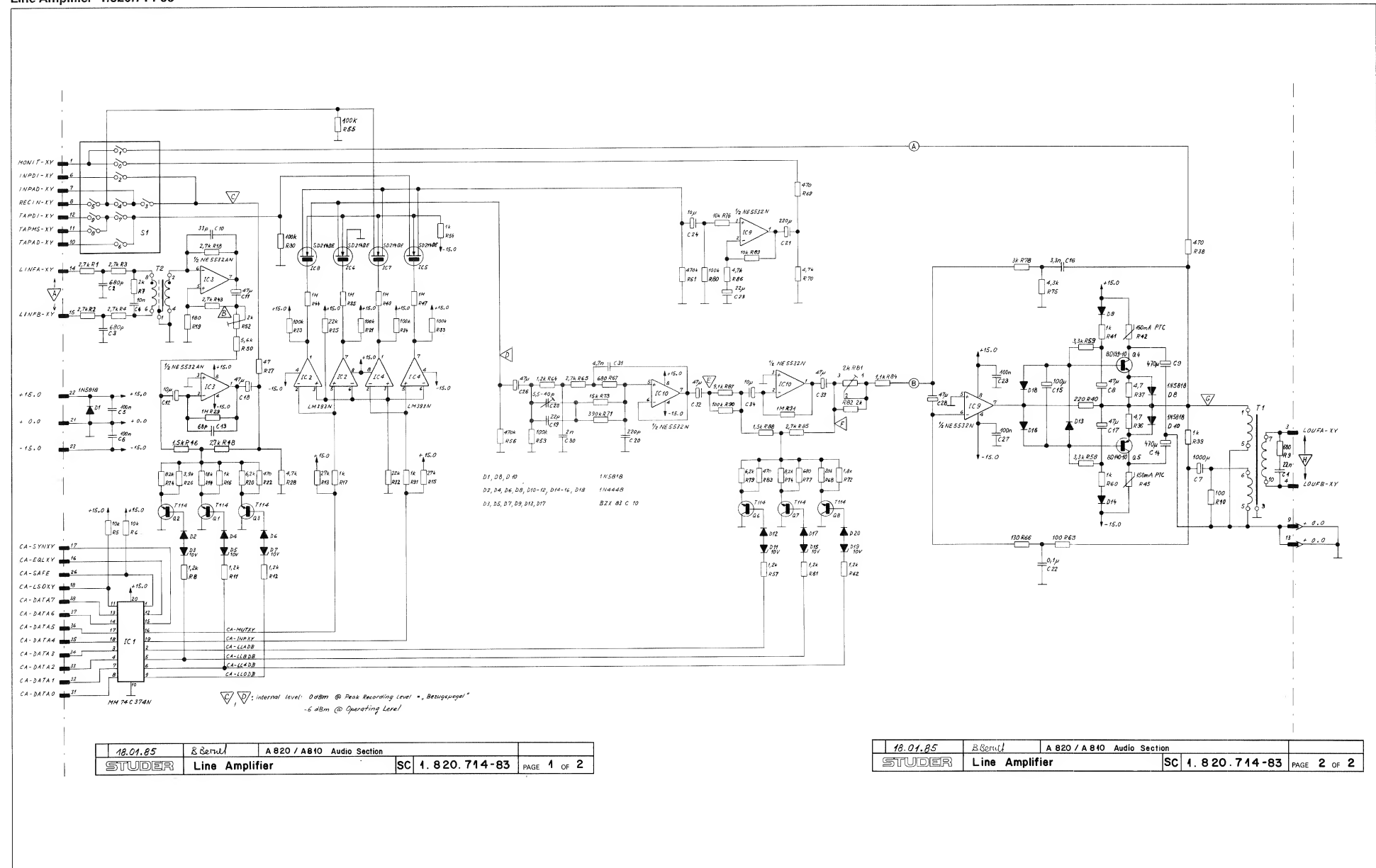
Audio Block Diagram A812



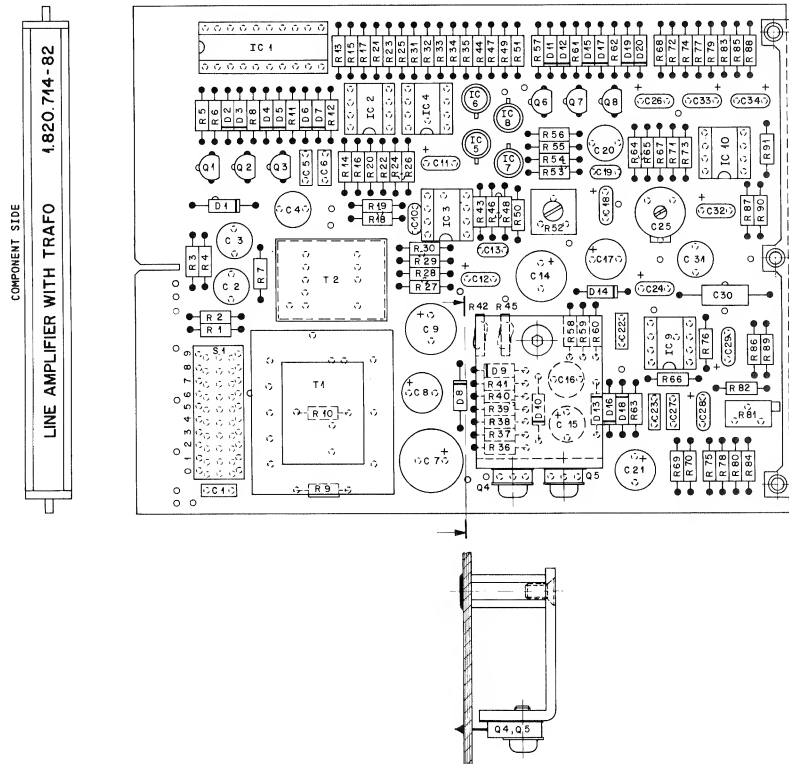
Level Diagrams, Line Amplifier



Line Amplifier 1.820.714-83



Line Amplifier 1.820.714-83



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MARKUP
C	.0001	59.08.0229	22 $\frac{1}{2}$ "	10K	
C	.0002	59.05.1681	680 $\frac{1}{2}$ "	1K	
C	.0003	59.05.1681	680 $\frac{1}{2}$ "	1K	
C	.0004	59.05.1103	10 $\frac{1}{2}$ "	1K	
C	.0006	59.05.0104	100 $\frac{1}{2}$ "	200K	PETP
C	.0008	59.05.0104	100 $\frac{1}{2}$ "	10K	PETP
C	.0009	59.22.6470	47 $\frac{1}{2}$ "	10% 40V. El	
C	.0010	59.22.6470	47 $\frac{1}{2}$ "	10% 40V. El	
C	.0010	59.24.2390	33 $\frac{1}{2}$ "	5K 8150V. Sal	
C	.0011	59.26.2100	10 $\frac{1}{2}$ "	5K 8150V. Sal	Ph
C	.0012	59.26.2100	10 $\frac{1}{2}$ "	20K 16KV. Sal	
C	.0013	59.24.2390	33 $\frac{1}{2}$ "	5K 8150V. Sal	Ph
C	.0014	59.23.4471	470 $\frac{1}{2}$ "	10% 10V. El	
C	.0015	59.22.3103	10 $\frac{1}{2}$ "	10K 10V. El	
C	.0016	59.08.1382	3300 $\frac{1}{2}$ "	1K	
C	.0017	59.22.6470	47 $\frac{1}{2}$ "	10% 40V. El	
(O)	.0018	59.26.2470	47 $\frac{1}{2}$ "	20K 6.3V. Sal	
C	.0018	59.26.2470	47 $\frac{1}{2}$ "	20K 6.3V. Sal	Ph
C	.0019	59.24.2220	22 $\frac{1}{2}$ "	5K 8150V. Sal	
C	.0020	59.05.1221	100 $\frac{1}{2}$ "	10K	bipolar
C	.0021	59.22.2521	220 $\frac{1}{2}$ "	10% 6V. El	
C	.0022	59.05.8104	100 $\frac{1}{2}$ "	10K	
C	.0023	59.06.0104	100 $\frac{1}{2}$ "	60V. PETP	
C	.0024	59.26.2100	10 $\frac{1}{2}$ "	5K 8150V. Sal	Ph
C	.0025	59.16.0108	40 $\frac{1}{2}$ "	Terima capacitor, Philips No 2222 808	324908
C	.0026	59.26.0108	40 $\frac{1}{2}$ "	Terima capacitor, Philips No 2222 808	324908
C	.0027	59.06.0101	100 $\frac{1}{2}$ "	10K	
C	.0028	59.26.0107	47 $\frac{1}{2}$ "	20K 6.3V. Sal	
C	.0029	59.26.0107	47 $\frac{1}{2}$ "	20K 6.3V. Sal	
C	.0030	59.12.7202	2 $\frac{1}{2}$ "	10% 10V. Sal	
C	.0031	59.26.0107	47 $\frac{1}{2}$ "	20K 6.3V. Sal	
C	.0032	59.26.0470	47 $\frac{1}{2}$ "	20K 6.3V. Sal	
C	.0033	59.26.0107	47 $\frac{1}{2}$ "	20K 6.3V. Sal	
C	.0034	59.26.2100	10 $\frac{1}{2}$ "	20K 16KV. Sal	
D	.0001	50.04.0512	185818		Not

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
D..0002		50.04.0123	184648		ITT/Phs
D..0003		50.04.0114	109 Z	5X	ITT/Phs
D..0004		50.04.0123	184648		ITT/Phs
D..0004		50.04.0114	109 Z	5X	ITT/Phs
D..0006		50.04.0123	184648		ITT/Phs
D..0007		50.04.0114	109 Z	5X	ITT/Phs
D..0008		50.04.0127	130818		ITT/Phs
D..0009		50.04.0127	130818		ITT/Phs
D..0010		50.04.0127	130818	5X	ITT/Phs
D..0011		50.04.0114	109 Z		ITT/Phs
D..0012		50.04.0123	184648		ITT/Phs
D..0013		50.04.0123	184648		ITT/Phs
D..0014		50.04.0123	184648		ITT/Phs
D..0015		50.04.0114	109 Z	5X	ITT/Phs
D..0016		50.04.0123	184648		ITT/Phs
D..0017		50.04.0123	184648		ITT/Phs
D..0018		50.04.0123	184648		ITT/Phs
D..0019		50.04.0114	109 Z	5X	ITT/Phs
D..0020		50.04.0114	109 Z		ITT/Phs
IC..0001		50.07.0003	HW47374H		NS
IC..0002		50.08.003	LS9318		Ti/SS
IC..0003		50.09.0106	NS32328	XHS3528, 55328A3	Si/Ss
IC..0004		50.08.003	LS9318		Ti/SS
IC..0005		50.11.001	NS214	NSD 214	Ti/SS
IC..0006		50.11.0106	NSD 214	NSD 214	Ti/SS
IC..0007		50.09.0106	NS32328	NSD 214	Ti/SS
IC..0008		50.11.0106	NSD 214	NSD 214	Ti/SS
IC..0009		50.09.0106	NS32328	XHS3528, 55328B	Ti/SS
IC..0010		50.09.0105	NS3528	XHS3528, 55328B	Si/Ss
OC..0001		1.010.034.80	T 114	See Note 1	Ti/SS
OC..0002		1.010.034.80	T 114	See Note 1	Ti/SS
OC..0003		1.010.034.80	T 114	See Note 1	Ti/SS
OC..0004		50.09.0106	NS32328	See Note 1	Ph-Si/SS
OC..0005		50.03.0462	FD40-10	FWP	Ti/SS
OC..0006		1.010.034.80	T 114	See Note 1	Ti/SS

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C	00007	1.010.034.50	7 1/4 inch	See Note 1	514
C	00008	1.010.034.50	7 1/4 inch	See Note 1	514
R	00001	57.11.3272	2.7 kOhm	1X	
R	00002	57.11.3272	2.7 kOhm	1X	
R	00003	57.11.3272	2.7 kOhm	1X	
R	00004	57.11.3272	2.7 kOhm	1X	
R	00005	57.11.4103	10 kOhm	1X	
R	00006	57.11.4103	10 kOhm	1X	
R	00007	57.11.4102	10 kOhm	1X	
R	00008	57.11.4122	1.2 kOhm	1X	
R	00009	57.11.3881	100 Ohm	1X	
R	00010	57.11.4101	100 Ohm	1X	
R	00011	57.11.4122	1.2 kOhm	1X	
R	00012	57.11.4101	100 Ohm	1X	
R	00013	57.11.4127	27 kOhm	1X	
R	00014	57.11.4127	27 kOhm	1X	
R	00015	57.11.4273	27 kOhm	1X	
R	00016	57.11.4102	10 kOhm	1X	
R	00017	57.11.4102	1 kOhm	1X	
R	00018	57.11.4102	1 kOhm	1X	
R	00019	57.11.4141	180 Ohm	2X	
R	00020	57.11.3652	6.2 kOhm	2X	
R	00021	57.11.4406	100 kOhm	2X	
R	00022	57.11.4471	100 kOhm	2X	
R	00023	57.11.4404	100 kOhm	2X	
R	00024	57.11.4403	100 kOhm	2X	
R	00025	57.11.4423	22 kOhm	2X	
R	00026	57.11.4392	3.9 kOhm	2X	
R	00027	57.11.4470	47 kOhm	2X	
R	00028	57.11.4472	100 kOhm	2X	
R	00029	57.11.4405	100 kOhm	2X	
R	00030	57.11.4104	100 kOhm	2X	
R	00031	57.11.4102	100 kOhm	1X	
R	00032	57.11.4223	22 kOhm	1X	
R	00033	57.11.4104	100 kOhm	1X	
R	00034	57.11.4103	100 kOhm	1X	

STU D E R (01) 05/11/21 SAE LINE AMPLIFIER FL 1.820.714.83 PAGE

IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
B	.0038	57.11.4105	1 Mcha	5X	
B	.0036	57.11.4479	4.7 Ohm	5X	
B	.0037	57.11.4479	4.7 Ohm	5X	
B	.0038	57.11.4471	470 Ohm	5X	
B	.0039	57.11.4102	1 Mcha	5X	
B	.0040	57.11.4221	220 Ohm	5X	
B	.0041	57.11.4102	1 Mcha	5X	
B	.0042	57.92.1151	150 aa	See Note 2	
B	.0043	57.11.4272	2.7 kOhm	2X	
B	.0044	57.11.4105	1 Mcha	5X	
B	.0045	57.92.1181	150 aa	See Note 2	
B	.0046	57.11.4182	1.8 kOhm	2X	
B	.0047	57.11.4108	1 Mcha	5X	
B	.0048	57.11.4272	2.7 kOhm	2X	
B	.0049	57.11.4108	1 Mcha	5X	
B	.0050	57.11.4582	8.6 kOhm	2X	
B	.0051	57.11.4474	470 Ohm	5X	
B	.0052	56.01.8202	1 kOhm	See Note 3	
B	.0053	57.11.4104	100 kOhm	5X	
B	.0054	57.11.4102	1 kOhm	5X	
B	.0055	57.11.4104	100 kOhm	5X	
B	.0056	57.11.4474	470 Ohm	5X	
B	.0057	57.11.4122	1.2 kOhm	5X	
B	.0058	57.11.4232	3.3 kOhm	5X	
B	.0059	57.11.4232	3.3 kOhm	5X	
B	.0060	57.11.4102	1 kOhm	5X	
B	.0061	57.11.4122	1.2 kOhm	5X	
B	.0062	57.11.4102	1 kOhm	5X	
B	.0063	57.11.4101	100 Ohm	2X	
B	.0064	57.11.4102	1 kOhm	5X	
B	.0065	57.11.4272	2.7 kOhm	2X	
B	.0066	57.11.31	1 Ohm	1X	
B	.0067	57.11.4681	680 Ohm	2X	
B	.0068	57.11.3203	470 Ohm	5X	
B	.0069	57.11.4471	470 Ohm	5X	
B	.0070	57.11.4472	470 Ohm	5X	
B	.0071	57.11.4394	390 kOhm	5X	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.	0072	57.11.4192	1.8 kOhm		
R.	0073	57.11.3153	15 kOhm		
R.	0074	57.11.4022	8.2 kOhm		
R.	0075	57.11.3432	4 kOhm		
R.	0076	57.11.4103	10 kOhm		
R.	0077	57.11.3081	680 kOhm		
R.	0078	57.11.4104	100 kOhm		
R.	0079	57.11.3622	6.2 kOhm		
R.	0080	57.11.4104	100 kOhm		
R.	0081	58.05.0202	2 kOhm	See Note 4	
R.	0082	57.11.3202	2 kOhm		
R.	0083	57.11.4471	470 Ohm		
R.	0084	57.11.3112	2 kOhm		
R.	0085	57.11.4272	2.7 kOhm		
R.	0086	57.11.4472	470 Ohm		
R.	0087	57.11.3912	9.1 kOhm		
R.	0088	57.11.4152	15 kOhm		
R.	0089	57.11.4103	10 kOhm		
R.	0090	57.11.4104	100 kOhm		
R.	0091	57.11.4105	1 kOhm		
S.I/G=9		55.01.0170	5Mhz	SR- 1010-692	
T..0001		1.022.960.00		Output Transformer	Output
T..0002		1.022.419.00		Input Transformer 1:1	St

5 T U D E R (01) 85/11/21 GAE LINE AMPLIFIER PL 1.620.714.83 PAGE 5

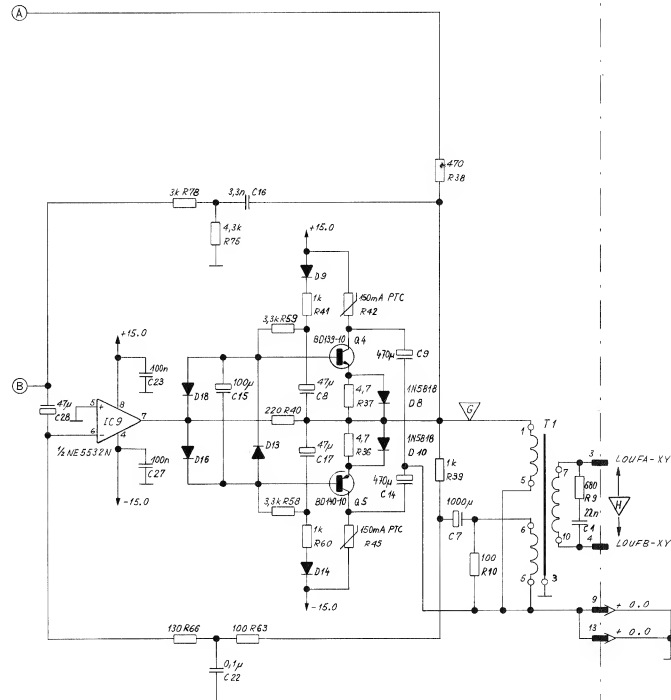
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	85.11.2.	Improved reliability.			
Note 1 - T 114 sel. For inverse mode (BC = 3 m)					
		VCE > 0.7 mV, I E 0 mA	VCE < 25 mV, I E 4 mA		
Note 2 - 150 mA PTC-Resistor:					
		Phillips Rr. 2322 661 1511			
		PTC-Resistor may be replaced by Zener-Resistor			
		ST-9.01890: Phillips Rr. 2322 265 13189.			
Note 3 - 2 M Ω Potentiometer lin. 10X					
		Bourne Rr. 3386 F-1-202			
		Allen Bradley Rr. 3 Z 202			
		Spectrol Rr. 63 M 202 T010			
Note 4 - 2 M Ω Potentiometer lin. 10X					
		Bourne Rr. 3296 Z - 1 - 202			
		Spectrol Rr. 66 Z 202 T-000			
		Merata Rr. POT 3105 Z - 1 - 202			
		Centrel: Rr. 183 K2 202			
Co=Ceramic; El=Electrolytic; Sol=Solid aluminium					
MANUFACTURER: De=Deer; Tr=International; Mo=Motorola;					
Si=Silicon; Sem=Semiconductor; Bu=Phillips; R=Raytheon;					
Sec=Secorac; S=Siemens; Sig=Signetics; Sil=Siliconix;					
St=Standard; Tri=Triac; T=Transistor; V=Vacuum Tube;					

ORIG 85/06/20 (01) 85/11/21

5 T U D E R (01) 85/11/21 GAE LINE AMPLIFIER PL 1.020.714.83 PAGE 6

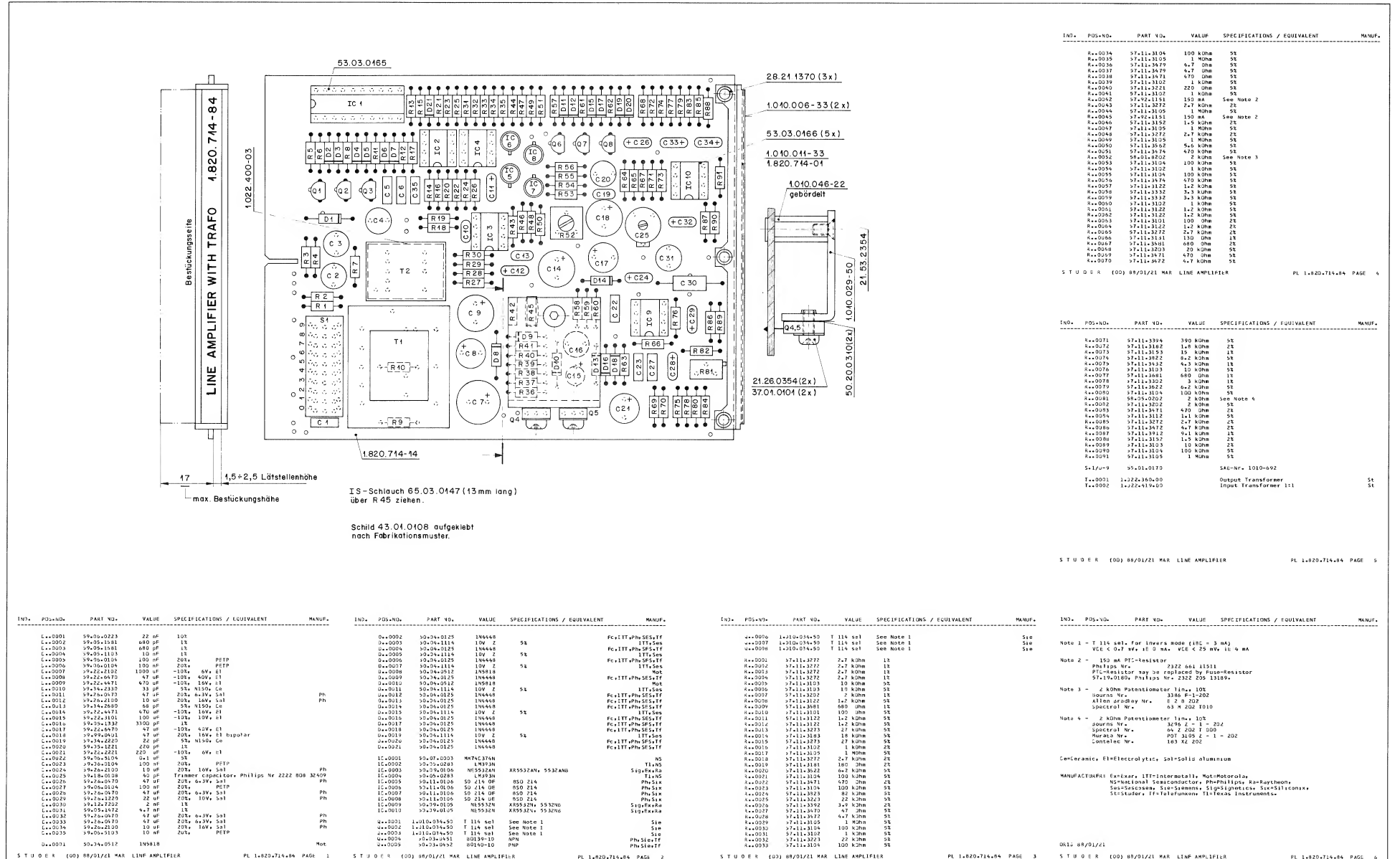


EDITION: 1. Oktober 1989

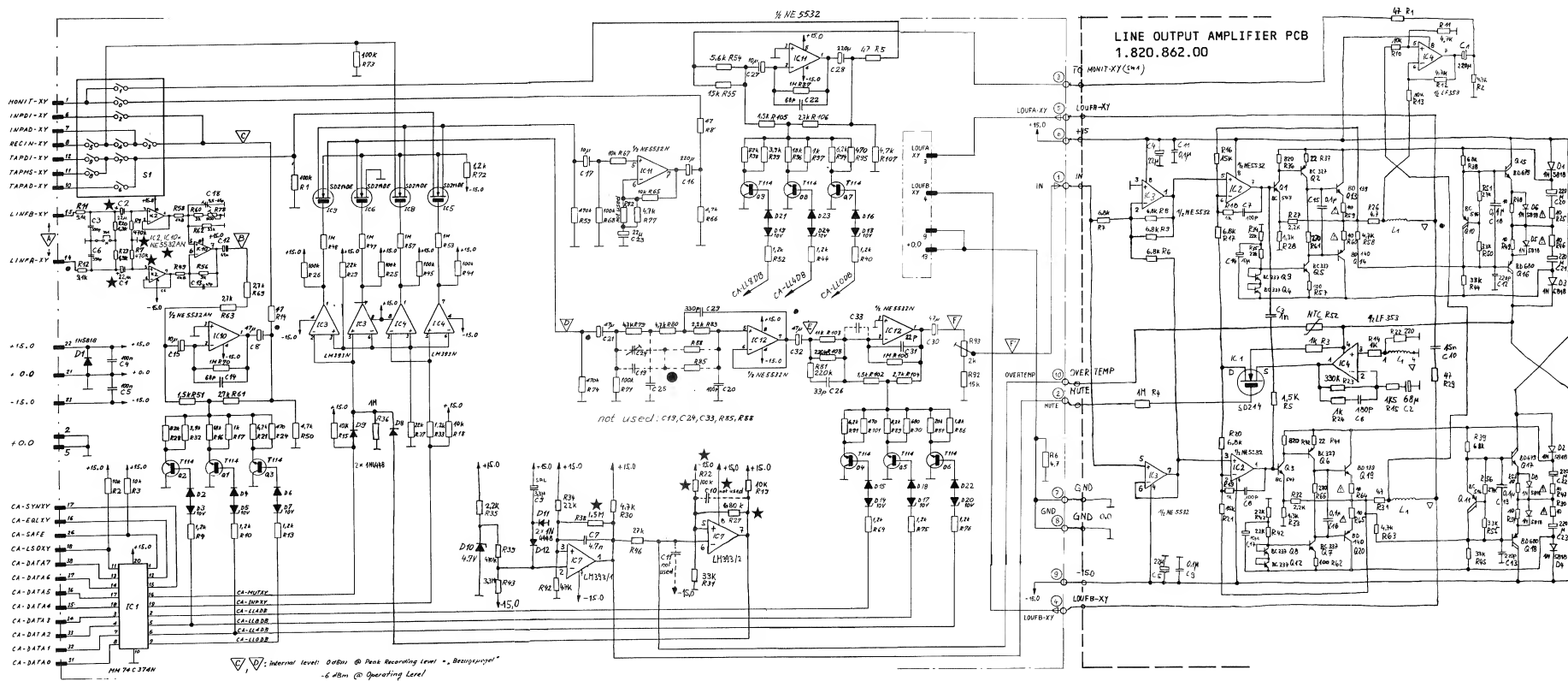


STUDER A812

Line Amplifier 1.820.714-84



Line Amp. Trafoless 1.820.715.81

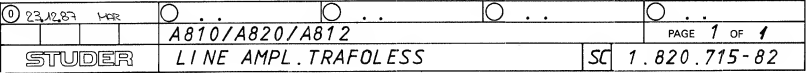


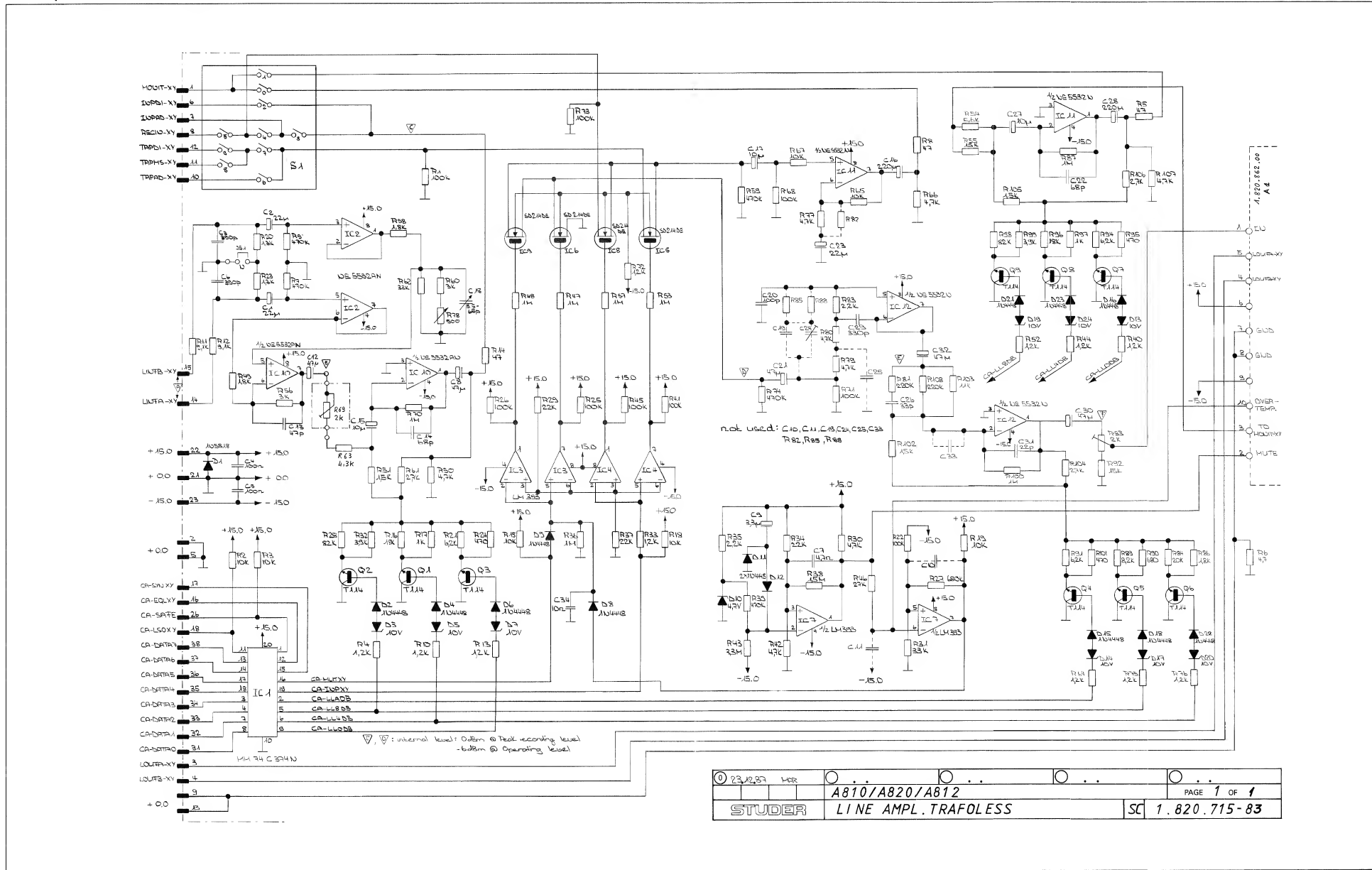
★ HAS BEEN MODIFIED:

	1.820.715.00	1.820.715.81
C10	10 nF (S9.06.0102)	NOT USED
R22	33 kΩ (S7.11.4333)	100 kΩ (S7.11.4104)
R27	1 MΩ or 3.3 MΩ (S7.11.4105 or S7.11.5335)	680 kΩ (S7.11.4684)
R38	3.3 MΩ (S7.11.5335)	1.5 MΩ (S7.11.5155)

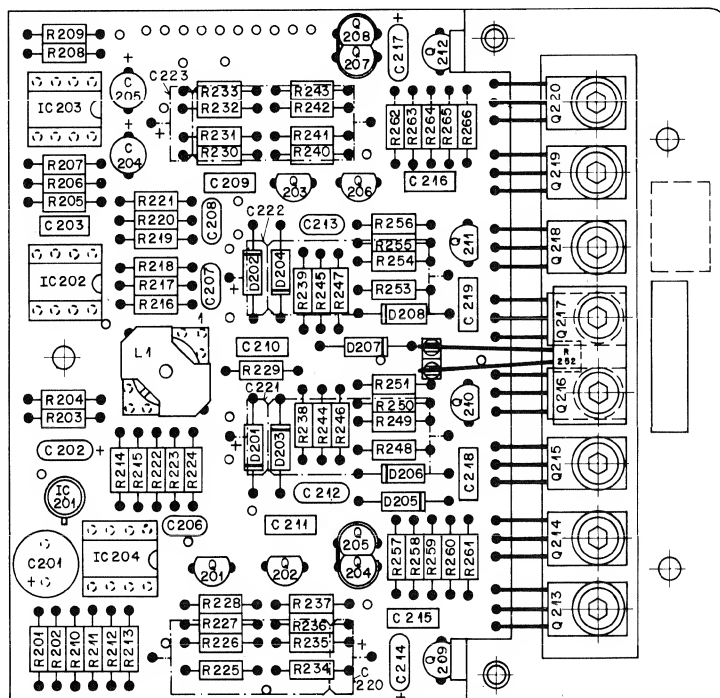
1.8. SEP. 1985	G4	A810/A812/A820
STUDER	LINE AMP. TRAFOLESS	1.820.715.81

10.9.1985	G4	A810/A812/A820
STUDER	LINE AMP. TRAFOLESS 1.820.715.00/81	1.820.862.00





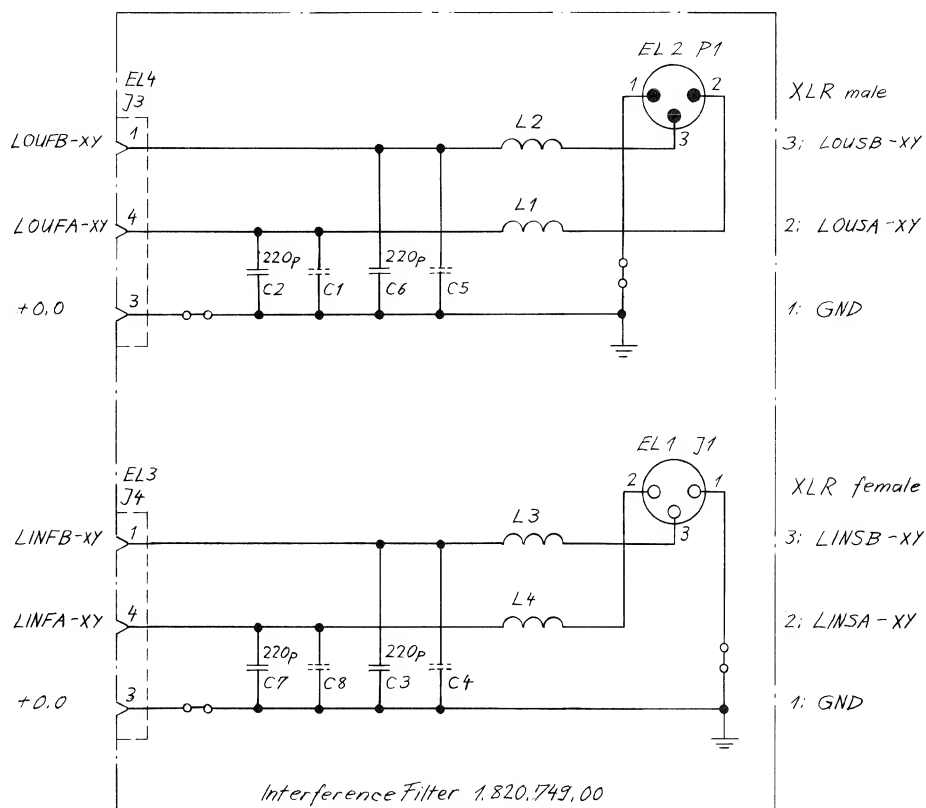
Line Output Amplifier PCB 1.820.862.00



INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C..0201	59.22.3221	220 uF	-20%, 10V, E1			R..0215	57.11.4152	1.5 kOhm	5%		
C..0202	59.26.0680	68 uF	-20%, 6.3V, Sal		Ph	R..0216	57.11.3153	15 kOhm	1%		
C..0203	59.06.0102	1 nF	10%, 63V, PETP			R..0217	57.11.3682	6.8 kOhm	1%		
C..0204	59.22.6220	22 uF	-20%, 35V, E1			R..0218	57.11.4102	1 kOhm	5%		
C..0205	59.22.6220	22 uF	-20%, 35V, E1			R..0219	57.11.4102	1 kOhm	5%		
C..0206	59.34.2181	180 pF	5%, 63V, Cer			R..0220	57.11.3682	6.8 kOhm	1%		
C..0207	59.34.4101	100 pF	5%, 63V, Cer			R..0221	57.11.3153	15 kOhm	1%		
C..0208	59.34.4101	100 pF	5%, 63V, Cer			R..0222	57.11.4221	220 Ohm	5%		
C..0209	59.06.0104	0.1 uF	10%, 63V, PETP			R..0223	57.11.4334	330 kOhm	5%		
C..0210	59.06.0153	15 nF	10%, 63V, PETP			R..0224	57.11.4102	1 kOhm	5%		
C..0211	59.06.0104	0.1 uF	10%, 63V, PETP			R..0225	57.11.4221	220 Ohm	5%		
C..0212	59.34.4221	220 pF	5%, 63V, Cer			R..0226	57.11.4479	4.7 Ohm	5%		See Note 2
C..0213	59.34.4221	220 pF	5%, 63V, Cer			R..0227	57.11.3222	2.2 kOhm	1%		
C..0214	59.26.2100	10 u	-20%, 16V, Sal		Ph	R..0228	57.11.3132	1.3 kOhm	1%		
C..0215	59.06.0104	0.1 uF	10%, 63V, PETP			R..0229	57.11.4470	4.7 Ohm	5%		
C..0216	59.06.0104	0.1 uF	10%, 63V, PETP			R..0230	57.19.0100	10 Ohm	5%		See Note 2
C..0217	59.26.2100	10 uF	-20%, 16V, Sal		Ph	R..0231	57.11.4479	4.7 Ohm	5%		
C..0218	59.06.0104	0.1 uF	10%, 63V, PETP			R..0232	57.11.3222	2.2 kOhm	1%		
C..0219	59.06.0104	0.1 uF	10%, 63V, PETP			R..0233	57.11.3132	1.3 kOhm	1%		
C..0220	59.25.5221	220 uF	-10%, 40V, E1			R..0234	57.11.4223	22 kOhm	5%		
C..0221	59.25.5221	220 uF	-10%, 40V, E1			R..0235	57.11.4223	22 kOhm	5%		
C..0222	59.25.5221	220 uF	-10%, 40V, E1			R..0236	57.11.4821	820 Ohm	5%		
C..0223	59.25.5221	220 uF	-10%, 40V, E1			R..0237	57.11.4220	22 Ohm	5%		
O..0201	50.04.0512	1N 5818	1N 5818		Mot	R..0238	57.11.4683	68 kOhm	5%		
O..0202	50.04.0512	1N 5818	1N 5818		Mot	R..0239	57.11.4683	68 kOhm	5%		
O..0203	50.04.0512	1N 5818	1N 5818		Mot	R..0240	57.11.4821	820 Ohm	5%		
O..0204	50.04.0512	1N 5818	1N 5818		Mot	R..0241	57.11.4220	22 Ohm	5%		
O..0205	50.04.0512	1N 5818	1N 5818		Mot	R..0242	57.11.4223	22 kOhm	5%		
O..0206	50.04.0512	1N 5818	1N 5818		Mot	R..0243	57.11.4223	22 kOhm	5%		
O..0207	50.04.0512	1N 5818	1N 5818		Mot	R..0244	57.11.4333	33 kOhm	5%		
O..0208	50.04.0512	1N 5818	1N 5818		Mot	R..0245	57.11.4333	33 kOhm	5%		
IC..0201	50.11.0106	50214-OE	BS0214		Sig+Ph	R..0246	57.19.0100	10 Ohm	5%		See Note 2
IC..0202	50.09.0105	NE5532 N	XR 5532 N, 5532 NB		Sig+Ex+Ra	R..0247	57.19.0100	10 Ohm	5%		See Note 2
IC..0203	50.09.0105	NE5532 N	XR 5532 N, 5532 NB		Sig+Ex+Ra	R..0248	57.11.4100	10 Ohm	5%		
IC..0204	50.09.0101	LF 353 N	TL 072 CP		NS+TI	R..0249	57.11.4100	10 Ohm	5%		
L..0201	1.022.273.00	39150 mH			St	R..0250	57.11.4333	33 kOhm	5%		
Q..0201	50.03.0436	BC 237 B	BC 547 B		Mot+Ph+Sie+Tf	R..0251	57.11.4273	27 kOhm	5%		
Q..0202	50.03.0351	BC 327-25	BC 547 B		Sie+Mot	R..0252	57.19.0220	11.2 kOhm	5%		See Note 3
Q..0203	50.03.0436	BC 237 B	BC 547 B		Mot+Ph+Sie+Tf	R..0253	57.11.4100	10 Ohm	5%		
Q..0204	50.03.0516	BC 337		See Note 1	Sie	R..0254	57.11.4100	10 Ohm	5%		
Q..0205	50.03.0516	BC 337		See Note 1	Sie	R..0255	57.11.4333	33 kOhm	5%		
Q..0206	50.03.0351	BC 327-25		See Note 1	Sie+Mot	R..0256	57.11.4273	27 kOhm	5%		
Q..0207	50.03.0516	BC 337		See Note 1	Sie	R..0257	57.11.4101	100 Ohm	5%		
Q..0208	50.03.0516	BC 337		See Note 1	Sie	R..0258	57.11.4472	4.7 kOhm	5%		
Q..0209	50.03.0516	BC 337		See Note 1	Sie	R..0259	57.19.0100	10 Ohm	5%		See Note 2
Q..0210	50.03.0448	BC 516			Sie+TI	R..0260	57.19.0100	10 Ohm	5%		See Note 2
Q..0211	50.03.0448	BC 516			Sie+TI	R..0261	57.11.4271	270 Ohm	5%		
Q..0212	50.03.0516	BC 337		See Note 1	Sie	R..0262	57.11.4101	100 Ohm	5%		
Q..0213	50.03.0451	BO 139			Ph	R..0263	57.11.4472	4.7 kOhm	5%		
Q..0214	50.03.0452	BO 140			Ph	R..0264	57.19.0100	10 Ohm	5%		See Note 2
Q..0215	50.03.0504	BO 679			SGS+Ph	R..0265	57.19.0100	10 Ohm	5%		See Note 2
Q..0216	50.03.0505	BO 680			SGS+Ph	R..0266	57.11.4271	270 Ohm	5%		
Q..0217	50.03.0504	BO 679			SGS+Ph						
Q..0218	50.03.0505	BO 680			SGS+Ph						
Q..0219	50.03.0451	BO 139			Ph						
Q..0220	50.03.0452	BO 140			Ph						
R..0201	57.11.4470	4.7 Ohm	5%			Note 1 -	Should be replaced as set. (Q4, Q5, Q9 matched) or (Q7, Q8, Q12 matched)				
R..0202	57.11.4472	4.7 kOhm	5%			Note 2 -	Has to be replaced by Originaltype or Philips-Type Nr. 2322 205 13109				
R..0203	57.11.4102	1 kOhm	5%			Note 3 -	NTC Thermistor Philips-Nr. 2322 640 90005				
R..0204	57.11.4105	1 MOhm	5%				Cer=Ceramic, El=Electrolytic, PETP=Polyesterfilm, Sal=Solid-Aluminium				
R..0205	57.11.4152	1.5 kOhm	5%				MANUFACTURER: Ex=Exar, Mot=Motorola, NS=National Semiconductor, Pn=Philips, Ra=Raytheon, SGS=SGS/Ates, Sig=Signetics, St=Studer, Tf=Telefunken, TI=Texas Instruments.				
R..0206	57.11.3682	6.8 kOhm	1%				ORIG 85/04/09				
R..0207	57.11.3682	6.8 kOhm	1%				STUDER (00) 85/04/09 BBT LINE OUTPUT AMPLIFIER 1.820.862.00				
R..0208	57.11.3682	6.8 kOhm	1%				STUDER (00) 85/04/09 BBT LINE OUTPUT AMPLIFIER 1.820.862.00				
R..0209	57.11.3682	6.8 kOhm	1%								
R..0210	57.11.3103	10 kOhm	1%								
R..0211	57.11.3472	4.7 kOhm	1%								
R..0212	57.11.3472	4.7 kOhm	1%								
R..0213	57.11.3103	10 kOhm	1%								
R..0214	57.11.4102	1 kOhm	5%								

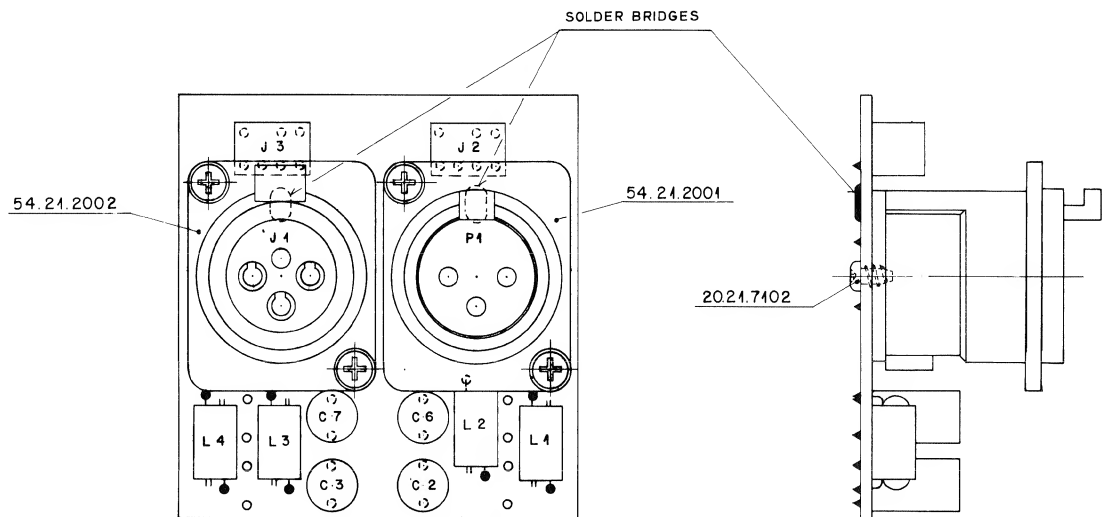
Interference Filter 1.820.749-00

R	
C	2, 7, 1, 8, 6, 3, 5, 4



03.08, 82	Simple L5	A 820 / A 810 Audio / Time Code Section	GR 35/36/37
STUDER	Interference Filter	SC 1.820.749-00	PAGE 1 OF 1

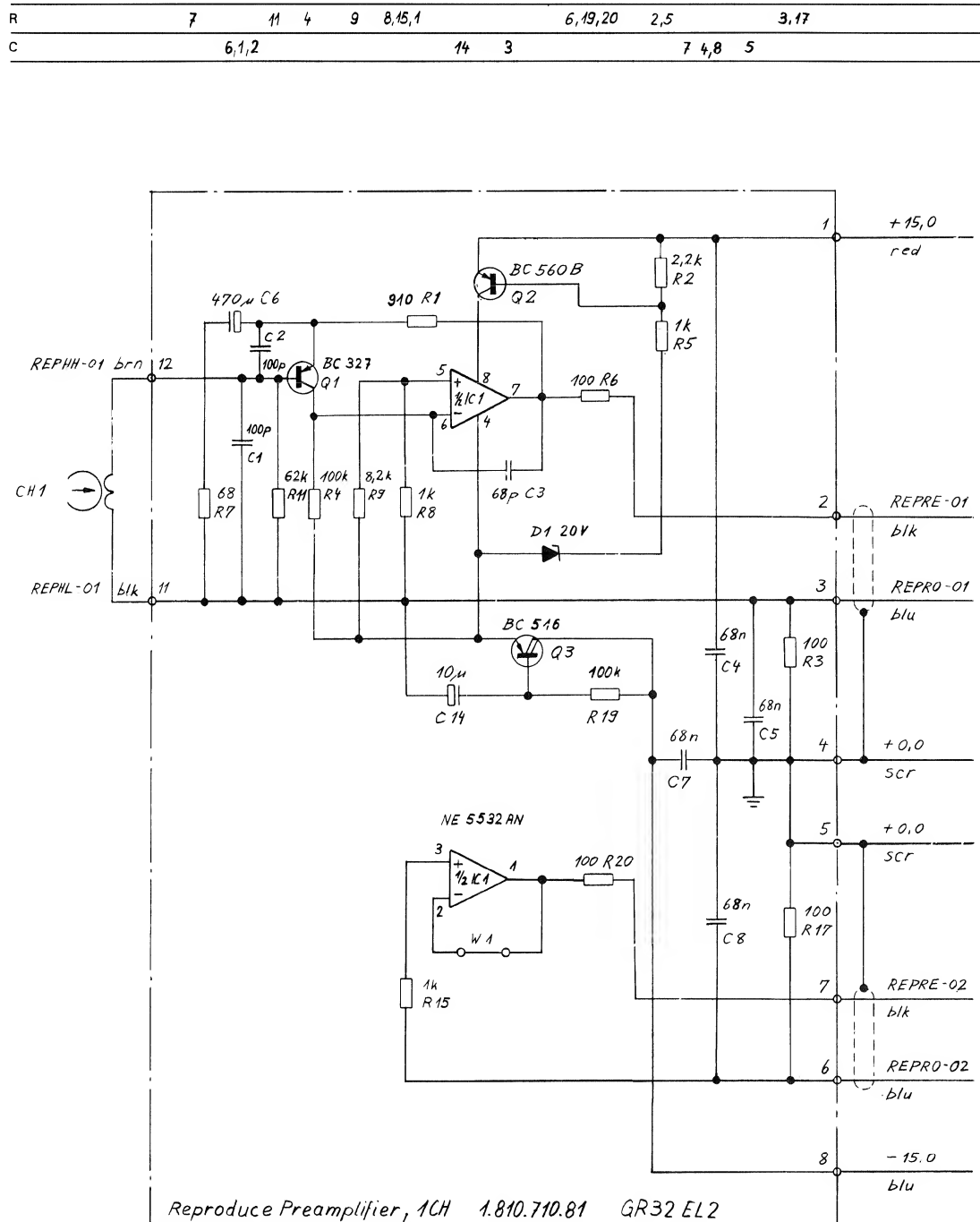
Interference Filter 1.820.749-00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	001		not used		
C...	002	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	003	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	004		not used		
C...	005		not used		
C...	006	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	007	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	008		not used		
J...	001	54.21.2002		XLR socket, Neutrik Nr. NC 3FD-V	
J...	003	54.01.0298	4 cont.	AMP Nr. 163-681-2	
J...	004	54.01.0298	4 cont.	AMP Nr. 163-681-2	
L...	001	62.01.0115		Interference-Coil, Philips Nr 4312 020 36700	
L...	002	62.01.0115		Interference-Coil, Philips Nr 4312 020 36700	
L...	003	62.01.0115		Interference-Coil, Philips Nr 4312 020 36700	
L...	004	62.01.0115		Interference-Coil, Philips Nr 4312 020 36700	
P...	001	54.21.2001		XLR plug, Neutrik Nr. NC 3M0-V	

PP=Polypropylen
MANUFACTURER: ERO=E. Roederstein, NSF=AEG-Telefunken-NSF,
ORIG 82/08/03
S T U D E R (00) 82/08/03 GAE INTERFERENCE FILTER 1.820.749.00 PAGE 1

Reproduce Preamplifier 1CH 1.810.710.81



09.03.83	B. Bernet			
STUDER	Reproduce Preamplifier 1CH	SC	1.810.710.81	PAGE 1 OF 1

Reproduce Preamplifier 1CH 1.810.710.81

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.08.7101	100 pF	2,5%	PP	FRONSF, Sie
C.....2	59.99.0622	100 pF		Ce	
C.....3	59.04.9680	68 pF		PP	ERONSF, Sie
C.....4	59.99.0205	68 nF		Ce	
C.....5	59.99.0205	68 nF		Ce	
C.....6	59.25.1471	470 uF		6.3V, El	
C.....7	59.99.0205	68 nF		Ce	
C.....8	59.99.0205	68 nF		Ce	
C.....14	59.26.2100	10 uF		16V, Sal	Ph
O.....1	50.04.1109	20 V Z		BZX83C 20, BZX55C 20, ZPD 20	ITT, Ses
IC.....1	50.09.0106	NE5532AN		XR5532AN, 5532ANB	Ex, Ka, Sig
Q.....1	50.03.0625	BC327			Sie
Q.....2	50.03.0515	BC307B		BC251B, BC557B, BC560B	ITT, Mot, Ph, Tf, TI
Q.....3	50.03.0448	9C516			Sie, TI
R.....1	57.11.3911	910 Ohm			
R.....2	57.11.4222	2,2 kOhm			
R.....3	57.11.4101	100 Ohm			
R.....4	57.11.4104	100 kOhm			
R.....5	57.11.4102	1 kOhm			
R.....6	57.11.4101	100 Ohm			
R.....7	57.11.4680	68 Ohm			
R.....8	57.11.4102	1 kOhm			
R.....9	57.11.4822	8,2 kOhm			
R.....11	57.11.3623	62 kOhm	1%		
R.....15	57.11.4102	1 kOhm			
R.....17	57.11.4101	100 Ohm			
R.....19	57.11.4104	100 kOhm			
R.....20	57.11.4101	100 Ohm			
W.....01				Wire bridge	

S T U D E R (00) 83/03/02 BBT REPRODUCE PREAMPLIFIER, 1 CH 1.810.710.81 PAGE 1

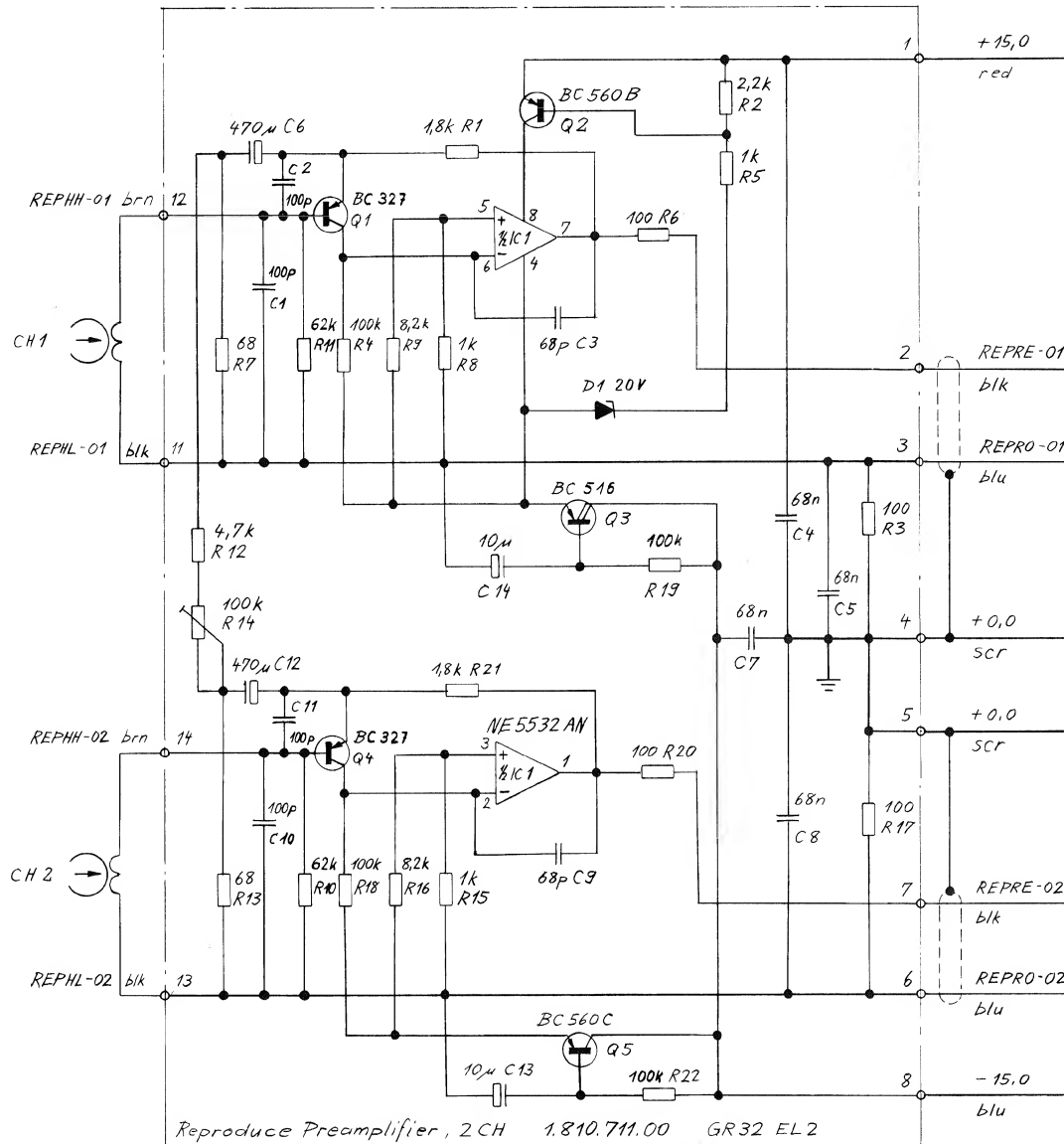
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Following components are not used:					
C	0009, 0010, 0011, 0012, 0013.				
Q	0004, 0005.				
R	0010, 0012, 0013, 0014, 0016, 0018, 0021, 0022.				
Ce=Ceramic, El=Electrolytic, PP=Polypropylen, Sal=Solid aluminium					
MANUFACTURER: ERD=E. Roederstein, Ex=Exar, ITT=Intermetall,					
NSF=AEG-Telefunken-NSF, Mot=Motorola, Ph=Philips,					
Ra=Raytheon, Ses=Sescom, Sie=Siemens, Sig=Signetics,					
Tf=Telefunken, TI=Texas Instruments					

ORIG 83/03/02

S T U D E R (00) 83/03/02 BBT REPRODUCE PREAMPLIFIER, 1 CH 1.810.710.81 PAGE 2

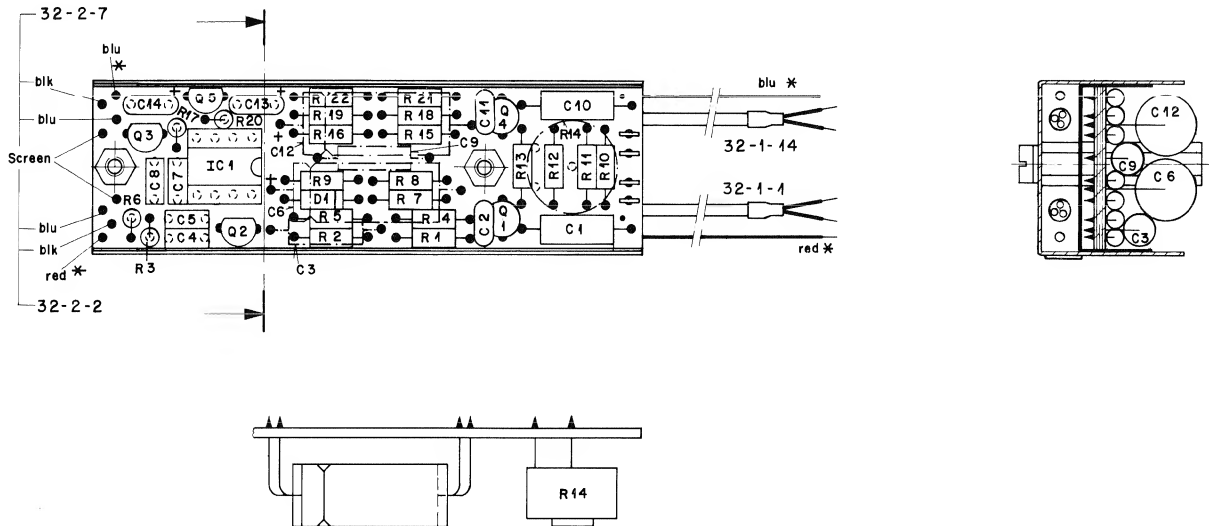
Reproduce Preamplifier 2CH 1.810.711-81

R	12, 7, 14, 13	11, 10	4, 18	9, 16	8, 1, 15, 21	6, 20	19, 22	2, 5	3, 17
C	6, 12, 2, 11, 1, 10				14, 13, 3, 9			7, 4, 8, 5	



09.03.83	B. Bernet		
STUDER	Reproduce Preamplifier 2 CH	SC	1.810.711-81 PAGE 1 OF 1

Reproduce Preamplifier 2CH 1.810.711-81



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C..0001	59.08.7101	100 pF	2,5%	PP	
C..0002	59.09.0622	100 pF		Ce	
C..0003	59.04.9680	68 pF		PP	
C..0004	59.09.0205	68 nF		Ce	
C..0005	59.09.0205	68 nF		Ce	
C..0006	59.25.1471	470 uF	6x3V	El	
C..0007	59.09.0205	68 nF		Ce	
C..0008	59.09.0205	68 nF		Ce	
C..0009	59.04.9680	68 pF		PP	
C..0010	59.08.7101	100 pF	2,5%	PP	
C..0011	59.09.0622	100 pF		Ce	
C..0012	59.25.1471	470 uF	6V	El	
C..0013	59.26.2100	10 uF	16V, Sal	Ph	
C..0014	59.26.2100	10 uF	16V, Sal	Ph	
D..0001	50.04.1109	20 V Z	BZX3C 20, BZX55C 20, ZPD 20	ITT, Ses	
IC..0001	50.09.0106	NE5532AN	XR5532AN, 5532ANB	Ex+Ra+Sig	
Q..0001	50.03.0629	BC327		Sie	
Q..0002	50.03.0513	BC307B	BC251B, BC557B, BC560B	ITT+Mot+Ph+Tf+TI	
Q..0003	50.03.0448	BC516		Sie+TI	
Q..0004	50.03.0629	BC327		Sie	
Q..0005	50.03.0496	BC560C		Mot+Ph+Sie+TI	
R..0001	57.11.4182	1.8 kOhm			
R..0002	57.11.4222	2.2 kOhm			
R..0003	57.11.4101	100 Ohm			
R..0004	57.11.4104	100 kOhm			
R..0005	57.11.4102	1 kOhm			
R..0006	57.11.4101	100 Ohm			
R..0007	57.11.4680	68 Ohm			
R..0008	57.11.4102	1 kOhm			
R..0009	57.11.4822	8.2 kOhm			
R..0010	57.11.3623	62 kOhm	1%		
R..0011	57.11.3623	62 kOhm	1%		
R..0012	57.11.4472	4.7 kOhm			

S T U D E R (00) 83/03/02 BBT REPRODUCE PREAMPLIFIER, 2 CH 1.810.711-81 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R..0013	57.11.4680	68 Ohm			
R..0014	58.01.4104	100 kOhm	See note 1		
R..0015	57.11.4102	1 kOhm			
R..0016	57.11.4822	8.2 kOhm			
R..0017	57.11.4101	100 Ohm			
R..0018	57.11.4104	100 kOhm			
R..0019	57.11.4104	100 kOhm			
R..0020	57.11.4101	100 Ohm			
R..0021	57.11.4182	1.8 kOhm			
R..0022	57.11.4104	100 kOhm			

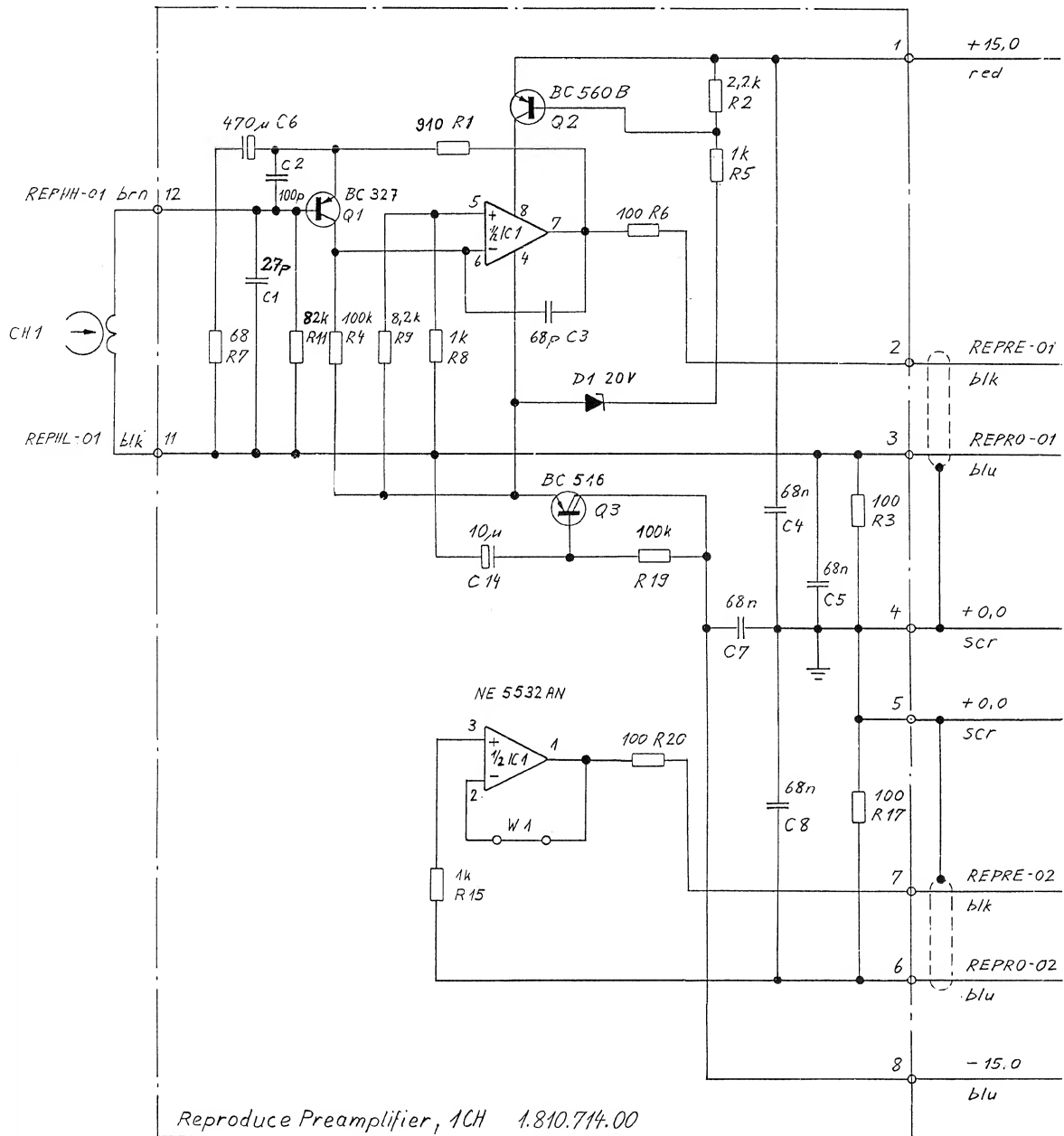
Note 1 - 100 kOhm Potentiometer +log, 10%
Allen Bradley Nr. YR 10% A

Ce=Ceramic, El=Electrolytic, PP=Polypropylene, Sal=Solid aluminium

MANUFACTURER: Ex=Exar, ITT=Intermetall, Mot=Motorola, Ph=Philips,
Ra=Raytheon, Ses=Sescom, Sie=Siemens, Sig=Signetics,
Tf=Telefunken, TI=Texas Instruments

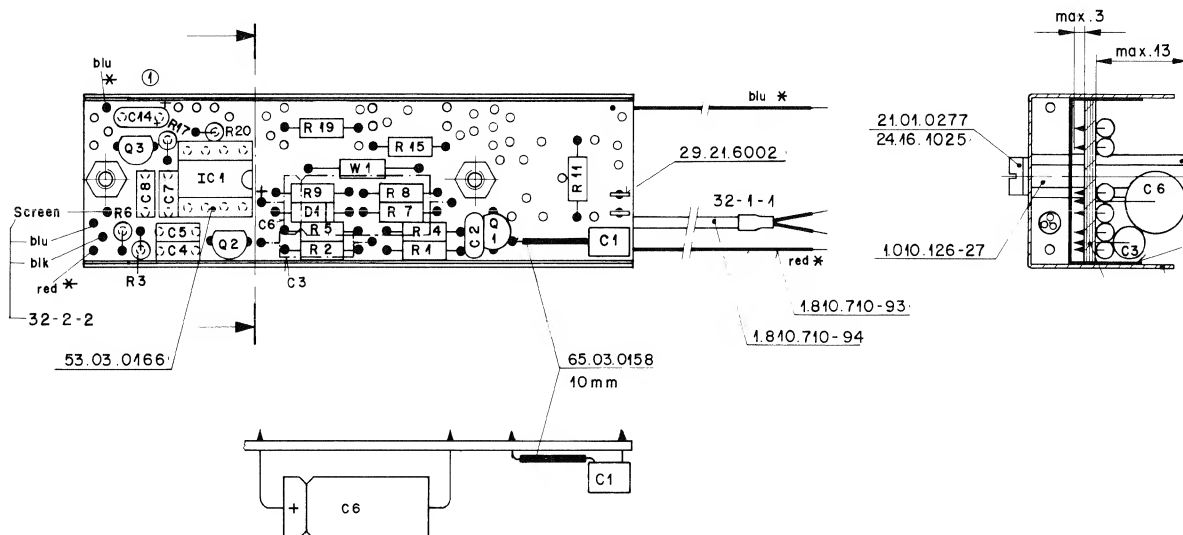
ORIG 83/03/02
S T U D E R (00) 83/03/02 BBT REPRODUCE PREAMPLIFIER, 2 CH 1.810.711-81 PAGE 2

Reproduce Preamplifier 1CH 1.810.714-00



30. 6. 87	Gämpel	Audio Section		
STUDER	Reproduce Preamplifier 1CH	SC	1.810.714-00	PAGE 1 OF 1

Reproduce Preamplifier 1CH 1.810.714-00



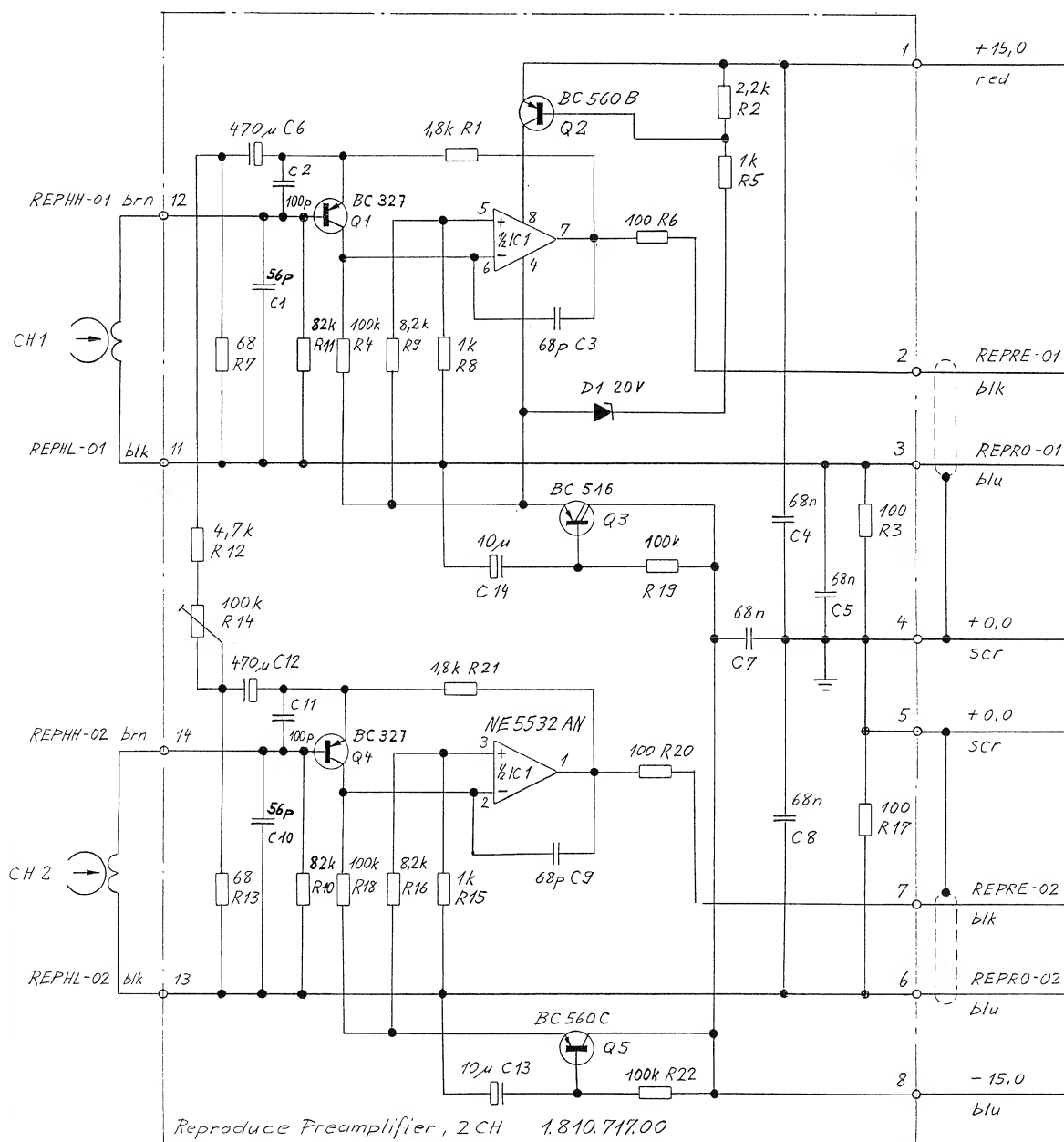
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C.....1	59.99.0612	27 pF	5%, Ce	
	C.....2	59.99.0622	100 pF	Ce	
	C.....3	59.99.0680	68 pF	PP	ERD, NSF, Sie
	C.....4	59.99.0205	68 nF	Ce	
	C.....5	59.99.0205	68 nF	Ce	
(00)	C.....6	59.29.1471	470 uF	6-3V, E1	
(01)	C.....6	59.99.1704	470 uF	105 Grad C., 6-3V, E1	
	C.....7	59.99.0205	68 nF	Ce	
	C.....8	59.99.0205	68 nF	Ce	
	C.....14	59.26.2100	10 uF	16V, Sal	Ph
	D.....1	50.34.1109	20 V Z	BZX83C 20, BZX55C 20, ZPD 20	ITT, Ses
	IC.....1	50.09.0106	NE5532AN	XR5532AN, 5532ANB	Ex, Ray, Sig
	U.....1	50.03.0525	BC327		Sie
	U.....2	50.03.0515	BC307B	BC251B, BC557B, BC560B	ITT, Mot, Ph, Tf, TI
	U.....3	50.03.0448	BC516		Sie, TI
	R.....1	57.11.3911	910 Ohm		
	R.....2	57.11.4222	2-2 kOhm		
	R.....3	57.11.4101	100 Ohm		
	R.....4	57.11.4104	100 kOhm		
	R.....5	57.11.4102	1 kOhm		
	R.....6	57.11.4101	100 Ohm		
	R.....7	57.11.4680	68 Ohm		
	R.....8	57.11.4102	1 kOhm		
	R.....9	57.11.4822	8-2 kOhm		
	R.....11	57.11.4823	8-2 kOhm	1%	
	R.....15	57.11.4102	1 kOhm		
	R.....17	57.11.4101	100 Ohm		
	R.....19	57.11.4104	100 kOhm		
	R.....20	57.11.4101	100 Ohm		
	W.....1	57.11.4000	0 Ohm	Resistor or insulated wire bridge	

STUDER (01) 88/03/31 80 REPRODUCE PREAMPLIFIER, 1 CH PL 1.810.714-00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	(01)	31.03.88		Improved long-term reliability.	
				Following components are not used:	
	C	0009, 0010, 0011, 0012, 0013.			
	Q	0004, 0005.			
	R	0010, 0012, 0013, 0014, 0016, 0018, 0021, 0022.			
				Ce=Ceramic, E1=Electrolytic, PP=Polypropylene, Sal=Solid aluminium	
				MANUFACTURER: ERD=Ernst Ruederstein, Ex=Exar, ITT=Intermetall,	
				NSF=Telefunken, NSF=Motorola, PH=Philips,	
				Ray=Raytheon, Ses=Sescom, Sie=Siemens, Sig=Signetics,	
				Tf=Telefunken, TI=Texas Instruments	

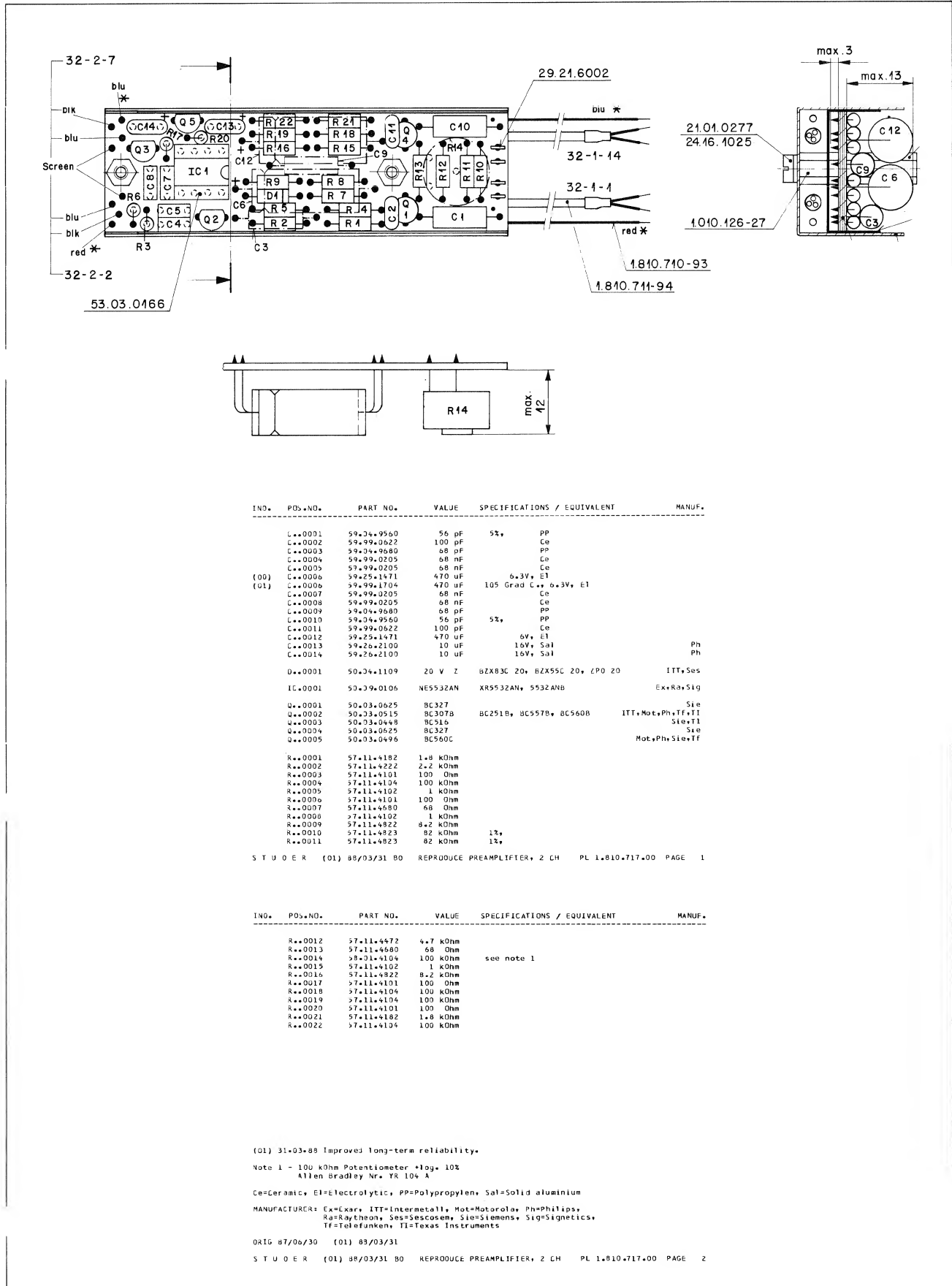
ORIG 87/06/30 (01) 88/03/31
STUDER (01) 88/03/31 80 REPRODUCE PREAMPLIFIER, 1 CH PL 1.810.714-00 PAGE 2

Reproduce Preamplifier 2CH 1.810.717-00

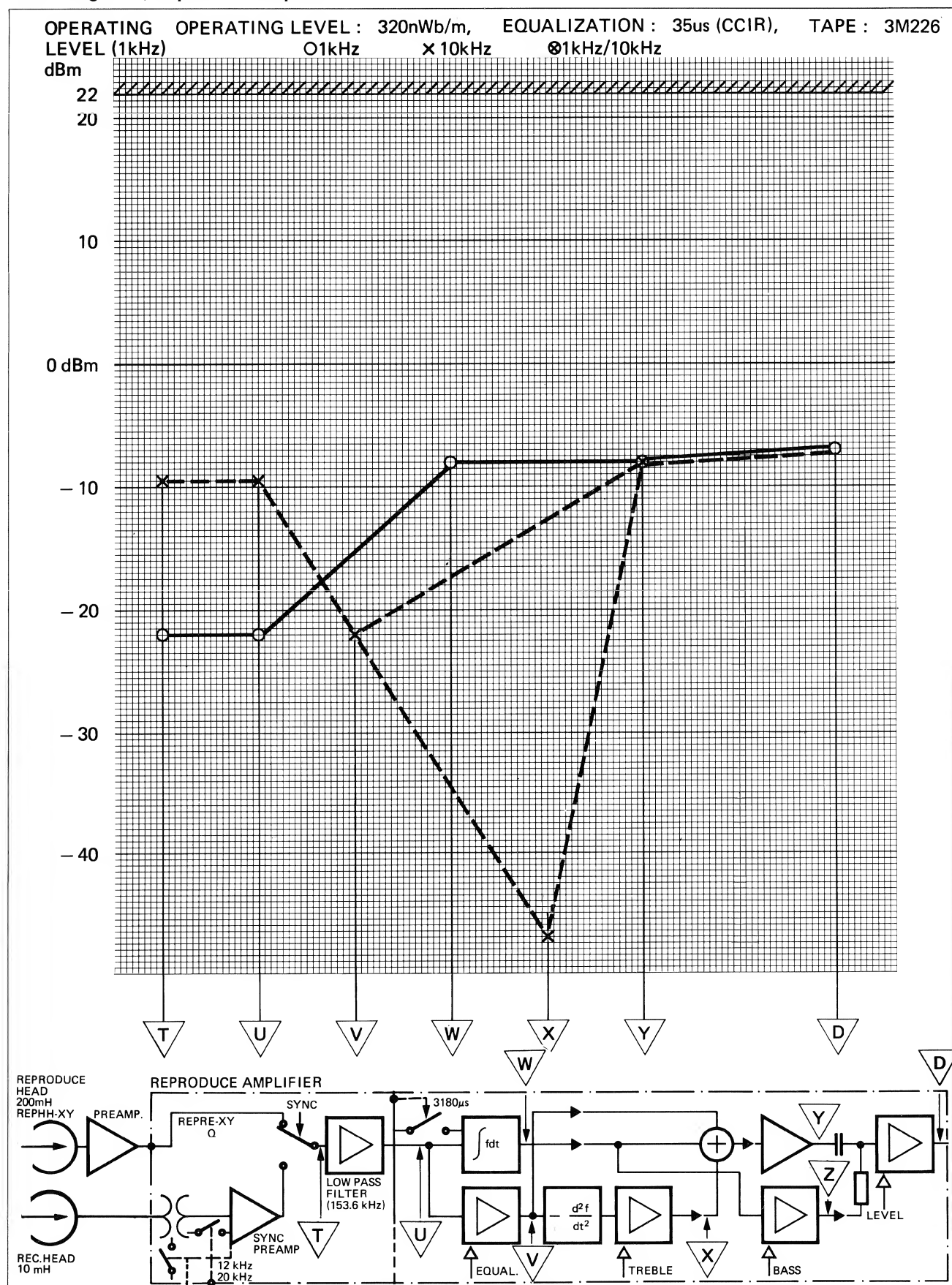


30. 6. 87	Gämperle	Audio Section	
STUDER	Reproduce Preamplifier 2 CH	SC 1.810.717-00	PAGE 1 OF 1

Reproduce Preamplifier 2CH 1.810.717-00

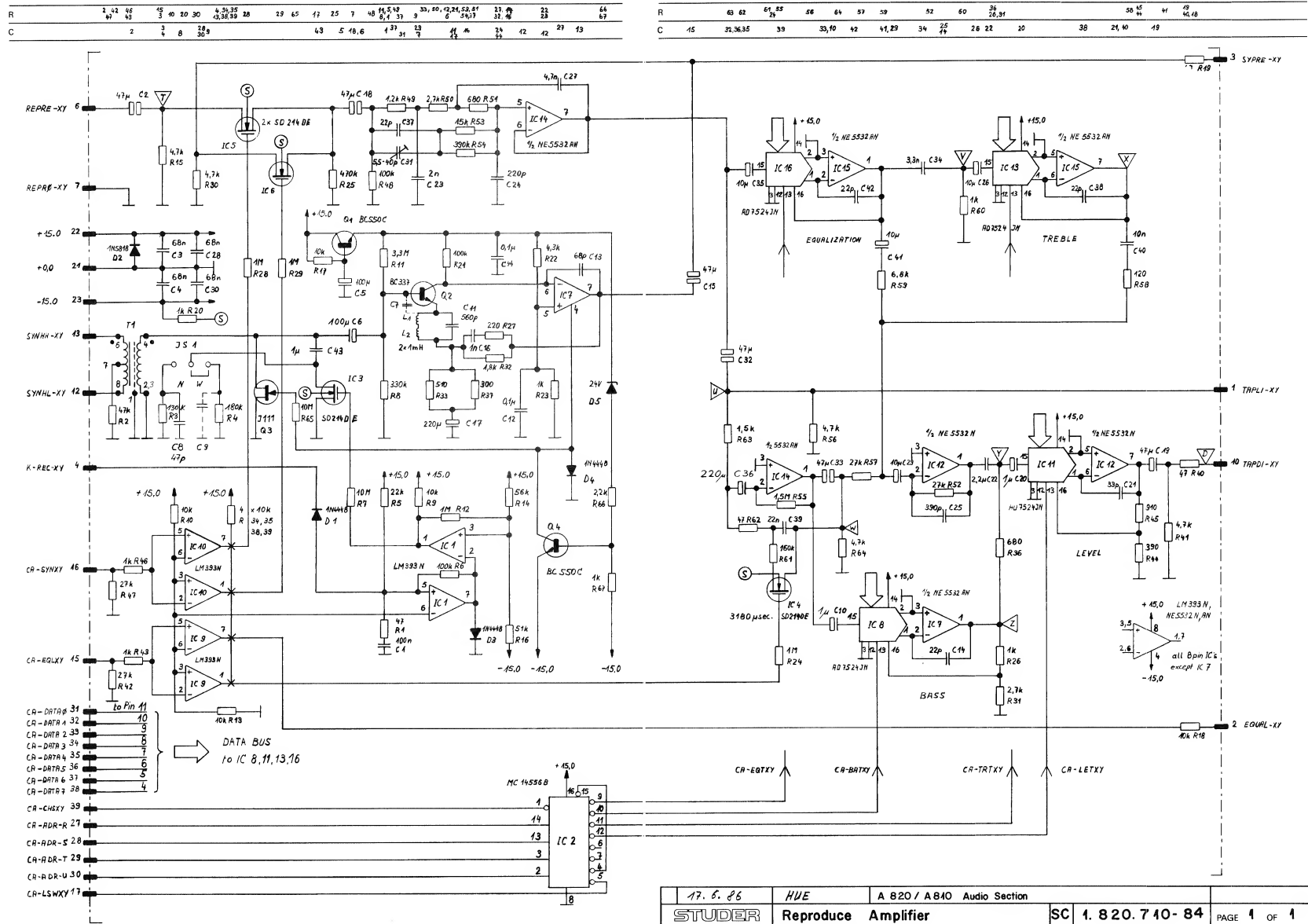


Level Diagrams, Reproduce Amplifier





Reproduce Amplifier 1.820.710-84



Reproduce Amplifier 1.820.710-84

COMPONENT SIDE

REPRODUCE AMPLIFIER

1.820.710-84

IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C-0001	59.06.5104	0.1 uF	5% 0.3V + PETP		
C-0002	59.06.0801	47 uF	-20% 16V + El bipolar		
C-0003	59.06.0803	68 nF	10% 0.3V + PETP		
C-0004	59.06.0803	68 nF	10% 0.3V + PETP		
C-0005	59.22.5101	100 uF	-20% 25V + El		
C-0006	59.22.5101	100 uF	-20% 25V + El		
C-0007	not used				
C-0008	59.36.2470	47 pF	2% N150 + Cer		
C-0009	not used				
C-0010	59.06.5105	1 uF	5% PETP		
C-0011	59.12.7561	560 pF	1% 0.3V + PS		
C-0012	59.06.5106	0.1 uF	5% 0.3V + PETP		
C-0013	59.06.9800	68 pF	5% 0.3V + PP		
C-0014	59.36.2220	22 pF	5% N150 + Cer		
C-0015	59.06.0801	47 uF	-20% 16V + El bipolar		
C-0016	59.06.0801	1 uF	10% 0.3V + PETP		
C-0017	59.22.2221	220 uF	-10% 6V + El		
C-0018	59.06.0801	47 uF	-20% 16V + El bipolar		
C-0019	59.26.0470	47 uF	-20% 6.3V + Sal		
C-0020	59.06.5105	1 uF	5% 50V + PETP		
C-0021	59.36.2330	33 pF	5% N150 + Cer		
C-0022	59.02.1225	2.2 uF	5% 0.3V + PPC		
C-0023	59.12.7202	2 nF	1% 0.3V + PS		
C-0024	59.06.1221	220 pF	1% 0.3V + PP		
C-0025	59.12.7391	390 pF	1% 0.3V + PS		
C-0026	59.26.2100	10 uF	-20% 16V + Sal		
C-0027	59.05.1472	4.7 nF	1% 0.3V + PP		
C-0028	59.06.0803	68 nF	10% 0.3V + PETP		
C-0029	59.26.2100	10 uF	-20% 16V + Sal		
C-0030	59.06.0803	68 nF	10% 0.3V + PETP		
C-0031	59.18.0108	40 pF	Trimmer capacitor, Philips Nr 2222-008.32409		
C-0032	59.06.0801	47 uF	-20% 16V + El bipolar		
C-0033	59.09.0401	47 uF	-20% 16V + El bipolar		
C-0034	59.06.1332	3.3 uF	1% 0.3V + PP		
C-0035	59.26.2100	10 uF	-20% 16V + Sal		
C-0036	59.22.2221	220 uF	-20% 10V + El		
C-0037	59.36.2220	22 pF	5% N150 + Cer		

STUDER (00) 86/06/17 HUE REPRODUCE AMPLIFIER 1.820.710-84 PAGE 1

Note 1 - Contact print Studer 54.01.0020, Berg 75 160-102-36
grd: Studer 54.01.0021, Philips 2422 026 B0003

PETP=Polyesterfilm; Sal=Solid-Aluminium; Cer=Ceramic
PS=Polystyrol; PP=Polypropylen; El=Electrolytic
MC=Metalized Polycarbonate

MANUFACTURER: AOT=Analog Devices Inc.; ENE=Exar; FCF=Fairchild;
Mot=Motorola; MPS=Micro power Semiconductors;
NS=National Semiconductors; Phil=Philips; Rand=Raytheon;
RCA=Radio corp. of America; SIE=Siemens; SIG=Signetics;
Sil=Siliconix; Int=Intelfonix; Tho=Thomson Semiconductors;
TI=Texas Instruments.

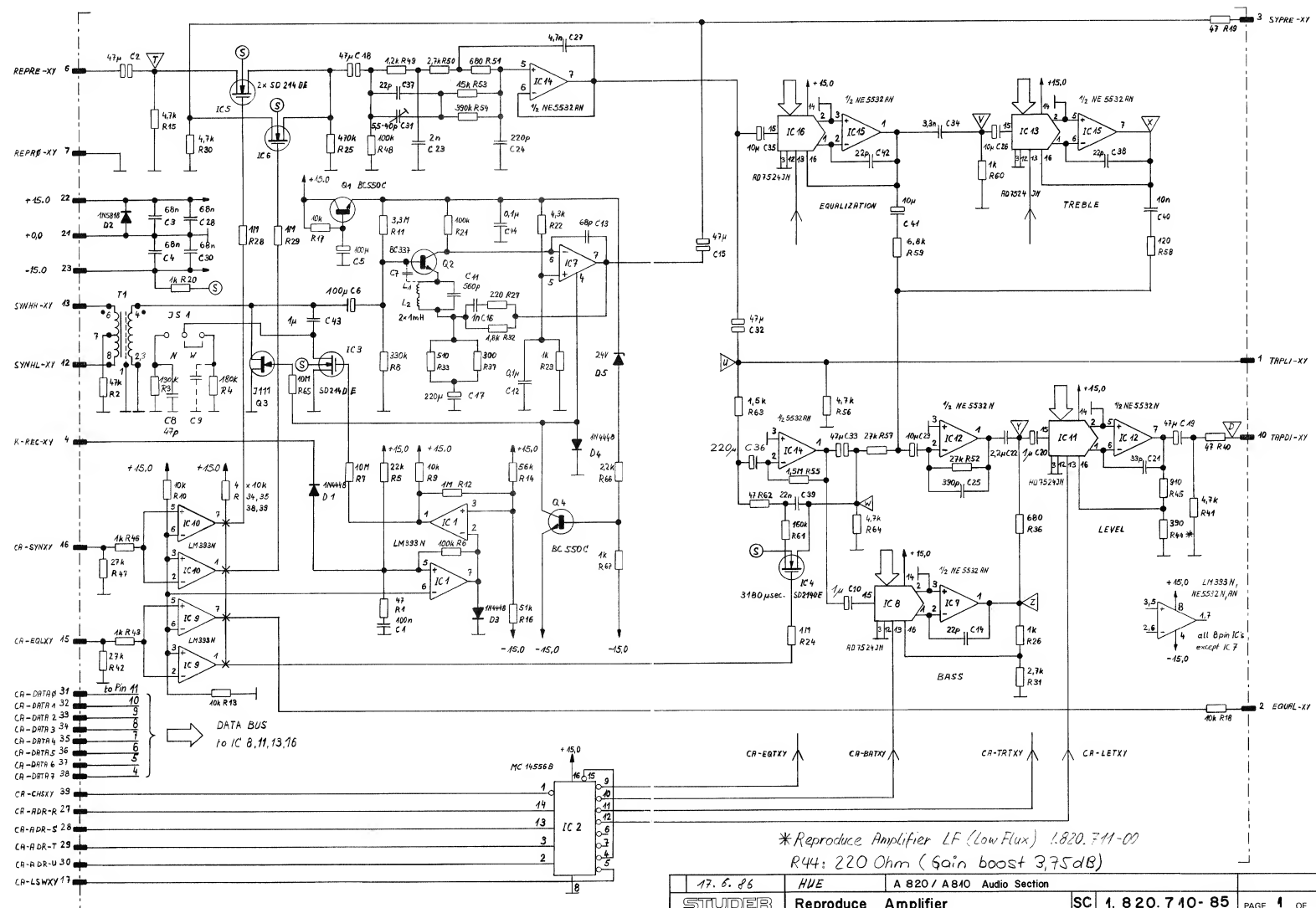
IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C-0038	59.36.2220	22 pF	5% N150 + Cer		
C-0039	59.05.1223	22 nF	1% 0.3V + PP		
C-0040	59.05.1303	1 nF	1% 0.3V + PP		
C-0041	59.26.2100	10 uF	-20% 16V + Sal		
C-0042	59.36.2220	22 pF	5% N150 + Cer		
C-0043	59.06.5105	1 uF	5% 50V + PETP		
C-0044	59.06.5105	0.1 uF	10% 0.3V + PETP		
C-0001	50.04.0125	IN 4448			
C-0002	50.04.0512	IN 5818	1N5819		
C-0003	50.04.0125	IN 4448			
C-0004	50.04.0125	IN 4448			
C-0005	50.04.1121	24 V	SE 0-4k		
IC-0001	50.05.0281	LM9314			
IC-0002	50.07.0004	045568	MC 14 5568 45568		
IC-0003	50.11.0104	50 214 DE	50 214 DE		
IC-0004	50.11.0104	50 214 DE	850 214		
IC-0005	50.11.0104	50 214 DE	850 214		
IC-0006	50.11.0104	50 214 DE	850 214		
IC-0007	50.09.0510	NE5532AN	89532AN, 5532ANR		
IC-0008	50.07.0007	AD7524JN	MP 7524 JN		
IC-0009	50.05.0101	LM9314			
IC-0010	50.05.0281	LM9314			
IC-0011	50.07.0004	AD7524JN	MP 7524 JN		
IC-0012	50.09.0510	NE5532N	89 5532 N, 5532 N0		
IC-0013	50.07.0004	AD7524JN	MP 7524 JN		
IC-0014	50.09.0510	NE5532AN	89 5532AN, 5532ANR		
IC-0015	50.09.0510	NE5532AN	89 5532AN, 5532ANR		
IC-0016	50.07.0007	AD7524JN	MP 7524 JN		
J5-0001			See note 1		
L-0001	62.01.0129	1 mH	Gowande Nr. 17-104, Delavan Nr. 1641-105		
L-0002	62.01.0129	1 mH	Gowande Nr. 17-104, Delavan Nr. 1641-105		
Q-0001	50.03.0407	BC550C			

STUDER (00) 86/06/17 HUE REPRODUCE AMPLIFIER 1.820.710-84 PAGE 2

IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Q-0002	50.03.0516	BC337			
Q-0003	50.03.0235	J 111			
Q-0004	50.03.0407	BC550C			
R-0001	57.11.4470	47 Ohm	5%		
R-0002	57.11.4473	47 kOhm	5%		
R-0003	57.11.1131	130 kOhm	5%		
R-0004	57.11.0181	180 kOhm	2%		
R-0005	57.11.4223	22 kOhm	5%		
R-0006	57.11.1100	100 kOhm	5%		
R-0007	57.11.1100	10 kOhm	5%		
R-0008	57.11.1135	330 kOhm	2%		
R-0009	57.11.1103	10 kOhm	5%		
R-0010	57.11.1103	10 kOhm	5%		
R-0011	57.11.1135	3.2 MOhm	2%		
R-0012	57.11.1105	1 MOhm	5%		
R-0013	57.11.1103	10 kOhm	5%		
R-0014	57.11.4663	56 kOhm	2%		
R-0015	57.11.4472	4.7 kOhm	5%		
R-0016	57.11.0513	51 kOhm	1%		
R-0017	57.11.1103	10 kOhm	5%		
R-0018	57.11.1103	10 kOhm	5%		
R-0019	57.11.4470	47 Ohm	5%		
R-0020	57.11.1102	1 kOhm	5%		
R-0021	57.11.1104	100 kOhm	2%		
R-0022	57.11.4632	4.7 kOhm	1%		
R-0023	57.11.1102	1 kOhm	2%		
R-0024	57.11.1105	1 MOhm	5%		
R-0025	57.11.4474	470 kOhm	5%		
R-0026	57.11.1102	1 kOhm	2%		
R-0027	57.11.4221	2.2 kOhm	5%		
R-0028	57.11.1105	1 MOhm	5%		
R-0029	57.11.1105	1 MOhm	5%		
R-0030	57.11.4472	4.7 kOhm	5%		
R-0031	57.11.4272	2.7 kOhm	2%		
R-0032	57.11.1180	1.8 kOhm	2%		
R-0033	57.11.3511	510 Ohm	2%		

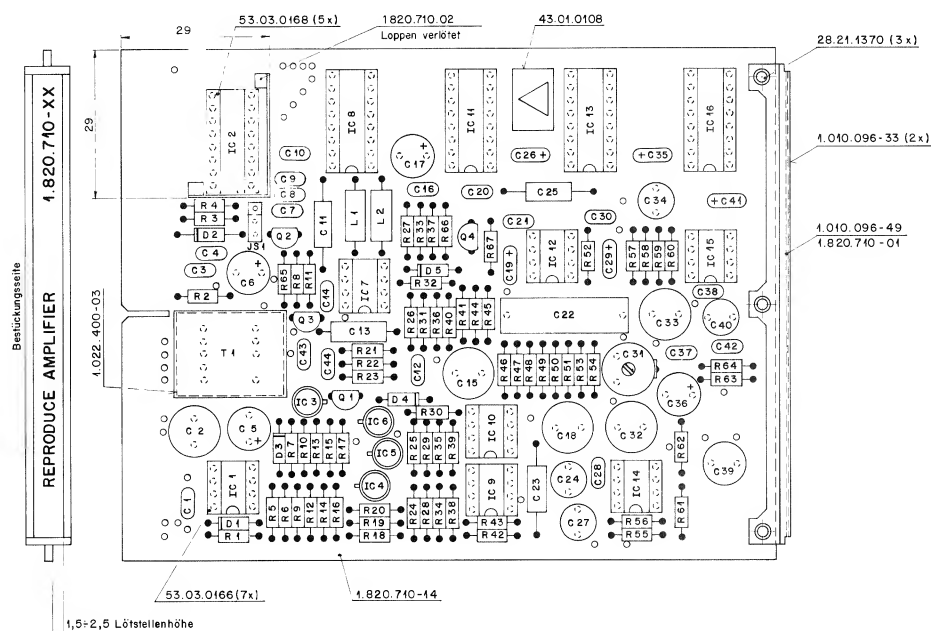
STUDER (00) 86/06/17 HUE REPRODUCE AMPLIFIER 1.820.710-84 PAGE 3

Reproduce Amplifier 1.820.710-85



17. 6. 86	HUE	A 820 / A840 Audio Section	
STUDER	Reproduce Amplifier	SC 1.820.710-85	PAGE 4 OF 4

Reproduce Amplifier 1.820.710-85



IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Q.....	50.09.0018	BC337			
Q.....	50.09.0018	111			
Q.....	50.09.0407	UC950G			
R.....1	57.11.38.70	47 Ohm	2%		
R.....2	57.11.38.73	47 kOhm	5%		
R.....3	57.11.38.74	100 kOhm	2%		
R.....4	57.11.38.84	180 kOhm	2%		
R.....5	57.11.38.85	100 kOhm	2%		
R.....6	57.11.38.04	100 kOhm	2%		
R.....7	57.11.38.08	100 Ohm	2%		
R.....8	57.11.39.04	380 kOhm	2%		
R.....9	57.11.39.08	100 kOhm	2%		
R.....10	57.11.39.09	10 Ohm	5%		
R.....11	57.11.39.09	10 kOhm	5%		
R.....12	57.11.39.09	1 MOhm	5%		
R.....13	57.11.39.09	10 Ohm	5%		
R.....14	57.11.39.83	96 kOhm	2%		
R.....15	57.11.39.72	10 kOhm	5%		
R.....16	57.11.39.51	5.1 kOhm	1%		
R.....17	57.11.39.03	10 kOhm	5%		
R.....18	57.11.39.03	10 kOhm	5%		
R.....19	57.11.39.70	47 Ohm	5%		
R.....20	57.11.39.02	10 kOhm	5%		
R.....21	57.11.39.04	100 kOhm	5%		
R.....22	57.11.39.32	4.3 kOhm	1%		
R.....23	57.11.39.02	10 kOhm	5%		
R.....24	57.11.39.05	1 MOhm	5%		
R.....25	57.11.39.74	10 kOhm	5%		
R.....26	57.11.39.02	10 kOhm	2%		
R.....27	57.11.39.21	100 Ohm	5%		
R.....28	57.11.39.05	1 MOhm	5%		
R.....29	57.11.39.05	1 MOhm	5%		
R.....30	57.11.39.72	4.7 kOhm	5%		
R.....31	57.11.39.72	4.7 kOhm	2%		
R.....32	57.11.39.65	16 kOhm	2%		
R.....33	57.11.39.11	10 Ohm	5%		

S T U D E R (00) 88/10/26 8D REPRODUCE AMPLIFIER PL 1.820.710.85 PAGE 3

IND.	PDR. NO.	PORT NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R-1	34	57.11.31.039	10 kWh	3%	
R-2	35	57.11.31.039	10 kWh	3%	
R-3	36	57.11.36.081	680 kWh	3%	
R-4	37	57.11.36.081	2 kWh	3%	
R-5	38	57.11.31.039	10 kWh	3%	
R-6	39	57.11.31.039	10 kWh	3%	
R-7	40	57.11.34.70	47 Ohm	3%	
R-8	41	57.11.34.72	4.7 Ohm	3%	
R-9	42	57.11.35.79	27 Ohm	3%	
R-10	43	57.11.31.02	1 Ohm	3%	
R-11	44	57.11.35.79	280 Ohm	3%	
R-12	45	57.11.30.11	9.0 Ohm	1%	
R-13	46	57.11.31.02	10 kWh	3%	
R-14	47	57.11.34.73	27 Ohm	3%	
R-15	48	57.11.31.04	150 Ohm	3%	
R-16	49	57.11.31.022	1.2 kWh	1%	
R-17	50	57.11.35.727	2.7 Ohm	3%	
R-18	51	57.11.38.281	880 Ohm	1%	
R-19	52	57.11.35.73	3 Ohm	3%	
R-20	53	57.11.31.53	13 Ohm	1%	
R-21	54	57.11.35.864	380 Ohm	3%	
R-22	55	57.11.51.55	1.5 kWh	3%	
R-23	56	57.11.34.72	27 Ohm	3%	
R-24	57	57.11.35.727	27 Ohm	2%	
R-25	58	57.11.31.53	120 Ohm	3%	
R-26	59	57.11.38.282	6.8 kWh	3%	
R-27	60	57.11.31.04	150 Ohm	3%	
R-28	61	57.11.31.04	180 Ohm	1%	
R-29	62	57.11.35.79	280 Ohm	3%	
R-30	63	57.11.31.52	1.5 kWh	1%	
R-31	64	57.11.34.72	4.7 Ohm	3%	
R-32	65	57.11.51.06	10 kWh	3%	
R-33	66	57.11.32.22	2.2 kWh	3%	
R-34	67	57.11.31.02	10 kWh	3%	

S T U D E R (00) 88/10/28 80 REPRODUCE AMPLIFIER PL 1.820.710.85 PAGE 4

IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C-11	1	59-06.0105	0.1 uF	5%, 50V	PETP
C-12	2	59-08.0402	47 uF	20%, 15V	E bipolar
C-13	3	59-05.0603	50 uF	10%, 50V	PETP
C-14	4	59-05.0008	68 uF	10%, 50V	PETP
C-15	5	59-22.0101	100 uF	20%, 25V	E1
C-16	6	59-22.0101	100 uF	20%, 25V	E1
C-17	7		not used		
C-18	8	59-34.2470	47 uF	25, N150	Cap
C-19	9		not used		
C-20	10	59-09.0105	1 uF	5%,	PETP
C-21	11	59-12.7901	0.1 uF	5%, 50V	PETP
C-22	12	59-08.0104	0.1 uF	5%, 50V	PETP
C-23	13	59-08.0104	0.1 uF	5%, 50V	PETP
C-24	14	59-34.2250	22 uF	5%, N150	Cap
C-25	15	59-08.0104	0.1 uF	5%, 50V	PETP
C-26	16	59-08.0120	1 uF	10%, 50V	PETP
C-27	17	59-22.0101	100 uF	20%, 25V	E1 bipolar
C-28	18	59-08.0105	1 uF	5%, 50V	PETP
C-29	19	59-08.0105	1 uF	20%, 15V	E bipolar
C-30	20	59-08.0402	47 uF	20%, 15V	E1 bipolar
C-31	21	59-34.5300	33 uF	5%, 50V	PETP
C-32	22	59-05.0603	50 uF	10%, 50V	PETP
C-33	23	59-05.0603	50 uF	10%, 50V	PETP
C-34	24	59-05.0603	50 uF	10%, 50V	PETP
C-35	25	59-05.0603	50 uF	10%, 50V	PETP
C-36	26	59-05.0603	50 uF	10%, 50V	PETP
C-37	27	59-05.0603	50 uF	10%, 50V	PETP
C-38	28	59-05.0603	50 uF	10%, 50V	PETP
C-39	29	59-05.0603	50 uF	10%, 50V	PETP
C-40	30	59-05.0603	50 uF	10%, 50V	PETP
C-41	31	59-10.2100	10 uF	20%, 15V	E bipolar
C-42	32	59-08.0402	47 uF	20%, 15V	E1 bipolar
C-43	33	59-08.0402	47 uF	20%, 15V	E1 bipolar
C-44	34	59-01.1352	3.3 uF	1%, 50V	PETP
C-45	35	59-01.1352	3.3 uF	1%, 50V	PETP
C-46	36	59-22.0221	220 uF	20%, 10V	E1
C-47	37	59-22.0221	22 uF	20%, 10V	E1

STUDER (00) 88/10/26 8D REPRODUCE AMPLIFIER PL 1.820.710.85 PAGE

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUFACTURER
C	43	69-34-2220	22 pf	1N5, 1N50	Car
C	43	69-05-1263	22 pf	1N1, 50V	P
C	43	69-05-1110	22 pf	1N1, 50V	P
C	43	69-05-1110	10 pf	-21N, 1N50	P
C	43	69-05-1010	10 pf	1N1, 50V	P
C	43	69-06-1010	1 pf	1N1, 50V	P
C	43	69-06-0104	1 pf	10S, 50V / PCTP	P
D	1	50-04-0101	1N 4448		
D	2	50-04-0112	1N 5919	1N5919	
D	3	50-04-0112	1N 4448		
D	4	50-04-0112	1N 4448		
D	5	50-04-1121	R 4 V	SC 0.4W	
IC	1	50-05-0283	LM393N		NO T
IC	2	50-07-0004	CA04568N	MC 14 5568, 45568	RCAL, MCAL
IC	3	50-11-0106	SD 214 D	8SD 214	Ph 314
IC	4	50-11-0106	SD 214 D	8SD 214	Ph 314
IC	5	50-11-0106	SD 214 D	8SD 214	Ph 314
IC	6	50-08-0106	SD 214 D	8SD 214, 59324N	Si 614, P
IC	7	50-07-0002	AT7524 N	MP 7524 J	AD1, MP
IC	8	50-05-0106	LM393N		NO T
IC	10	50-05-0283	LM393N	MP 7524 J	AD1, MP
IC	12	50-09-0106	NE5324N	XP 5332N, 5332 N	Si 614, P
IC	13	50-09-0106	NE5324N	XP 5332N, 5332N	Si 614, P
IC	14	50-09-0106	NE5324N	XP 5332N, 5332N	Si 614, P
IC	15	50-09-0106	NE5324N	XP 5332N, 5332N	Si 614, P
IC	16	50-07-0002	AT7524 N	MP 7524 J	AD1, MP
JS	1	62-01-0028		See note 1	
L	1	62-01-0102	1 mH	Guanada N- 17-104, Delavan N- 164-10S	
L	2	62-01-0102	1 mH	Guanada N- 17-104, Delavan N- 164-10S	
Q	1	50-09-0407	IC590C		Si 614, P

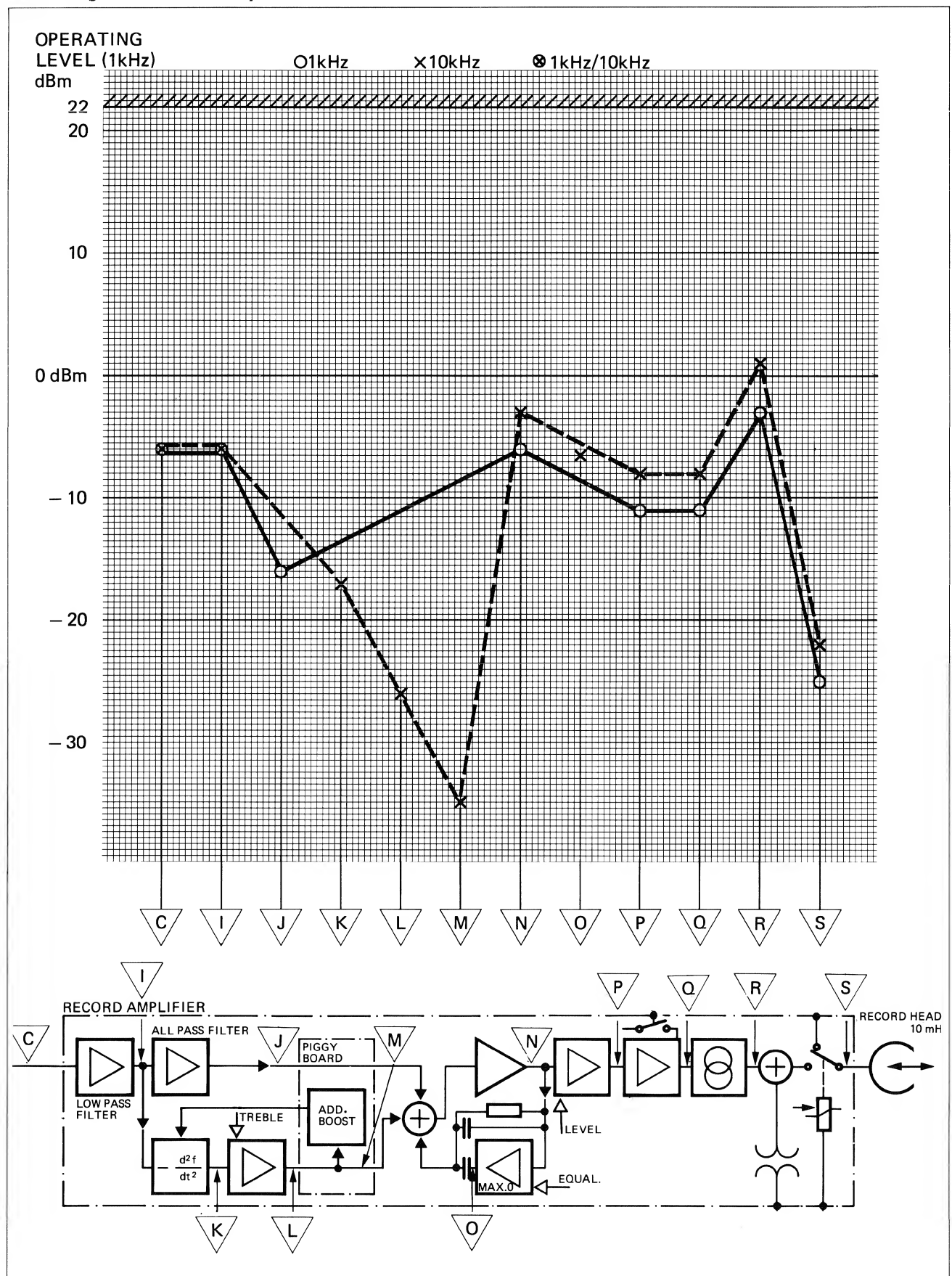
STUDER (00) 00/10/26 00 REPRODUCE AMPLIFIER PL 1,820,710.05 PAGE

IND.	PDS NO.	PART NO.	VALUE	SPECIFICATION / EQUIVALENT	MANUF.
		Note 1 - Contact pin1 Studer S4.01.0020, Berg Bergel Studer S4.01.0021, Philips 942Z Q4A 08003	79 160-102-36		
		PCEPint Huter Inc., Baidai-p-h-lum-lun, CerCarma PDRMicrostrel, PRRPolypropylin, ELectrolytic NRC-Petro (ze Poly-carbonate)			
		MANUFACTURER: AduAmalg Devices Inc., KufExar, FofFairchild, MetoMotorola, MoMiMicroprocessor Semiconductor, NMNational Semiconductor, PRRPiLusa, RndRaytheon, RCARadio corp. of America, ReRoRemmex, SigSignetics, SiMSiliconix, TelTelEfunKen, TheCGR-Thomson Semiconductor, TiTexas Instruments.			

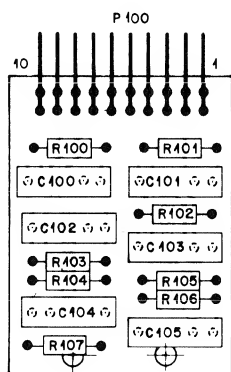
QRTS BR/10/25

STUDER (00) 88/10/28 BD REPRODUCE AMPLIFIER PL 1.820.710.85 PAGE 1

Level Diagrams, Record Amplifier



Adaption Board 1.820.740.00/81 for 1.317... heads



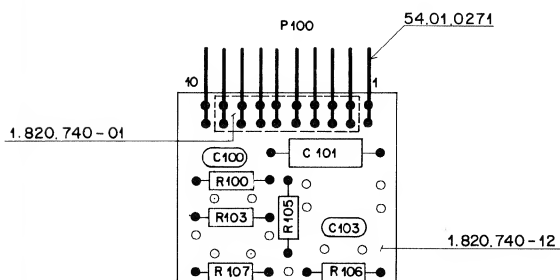
IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0100	59.12.4223	22 nF	5%	
	C..0101	59.11.6221	220 pF	5%	
	C..0102		not used		
	C..0103	59.02.5333	33 nF	5%	
	C..0104		not used		
	C..0105		not used		
	P..0100	54.01.0271	10 cont.	AMP-Nr. 163.740-8	
	R..0100	57.11.4222	2.2 kOhm	2%	
	R..0101		not used		
	R..0102		not used		
	R..0103	57.11.3912	9.1 kOhm	2%	
	R..0104		not used		
	R..0105	57.11.3432	4.3 kOhm	1%	
	R..0106	57.11.3432	4.3 kOhm	1%	
	R..0107	57.11.4561	560 Ohm	2%	

URIG 82/06/28

S T U D E R (00) 82/06/28 PB

ADAPTATION BOARD

1.820.740.00 PAGE 1



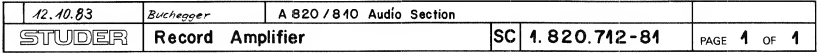
IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(03)	C..0100	59.06.5223	22 nF	5%	
(01)	C..0101	59.06.5333	33 nF	5%	
	C..0101	59.04.8221	220 pF	5%	
	C..0102		not used		
(00)	C..0103	59.05.5333	33 nF	5%	
(01)	C..0103	59.06.5223	22 nF	5%	
	C..0104		not used		
	C..0105		not used		
	P..0100	54.01.0271	10 cont.	AMP-Nr. 163.740-8	
	R..0100	57.11.4222	2.2 kOhm	2%	
	R..0101		not used		
	R..0102		not used		
	R..0103	57.11.3912	9.1 kOhm	2%	
	R..0104		not used		
	R..0105	57.11.3432	4.3 kOhm	1%	
	R..0106	57.11.3432	4.3 kOhm	1%	
	R..0107	57.11.4561	560 Ohm	2%	

(01) 86.12.03 Correction of error: C100 and C103 exchanged.

URIG 85/09/25 (01) 85/12/03

S T U D E R (01) 86/12/03 DD ADAPTATION BOARD

PL 1.820.740.81 PAGE 1





ENR.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
CN-0036	59-26-0408	47 up	1%	10V, 5% 10V, 5%	PH
CN-0037	59-26-2109	10 up	1%	10V, 5% 10V, 5%	PH
CN-0038	59-22-2321	20 up	1%	10V, 5% 10V, 5%	PH
CN-0039	59-05-1102	1 mf	1%	PP PP	PH
CN-0040	59-36-2220	22 pf	1%	PP PP	PH
CN-0041	59-05-1102	1 mf	1%	PP PP	PH
CN-0042	59-26-2109	47 up	1%	10V, 5% 10V, 5%	PH
CN-0043	59-05-1102	1 mf	1%	PP PP	PH
CN-0044	59-26-2109	47 up	1%	10V, 5% 10V, 5%	PH
CN-0045	59-05-1102	1 mf	1%	PP PP	PH
CN-0046	59-05-1102	1 mf	1%	PP PP	PH
OC-0001	50-04-0115	1N4004			ITT Sph-Sol I
OC-0002	50-04-0115	1N4004			ITT Sph-Sol I
OC-0003	50-04-0115	1N4004			ITT Sph-Sol I
OC-0004	50-04-0117	1N5118	1N5118		Not
EC-0001	50-07-0004	MC1458BPC	OC9548E+4	4555K PC	Motor&RC
EC-0002	50-11-0211	2N2121	OC9754N	5532NM	ITT&RC
EC-0003	50-07-0002	A07524N	MC9754N	5532NM	ITT&RC
EC-0004	50-07-0002	A07524N	MC9754N	5532NM	ITT&RC
EC-0005	50-07-0002	A07524N	MC9754N	5532NM	ITT&RC
EC-0006	50-07-0002	A07524N	MC9754N	5532NM	ITT&RC
EC-0007	50-04-0106	N5532AN	X5532AN	5532NM	Sig&E&R
EC-0008	50-07-0002	A07524N	MC9754N	5532NM	ITT&RC
EC-0009	50-04-0106	N5532AN	X5532AN	5532NM	Sig&E&R
EC-0010	50-04-0106	N5532AN	X5532AN	5532NM	Sig&E&R
J-0001	50-01-0307	10 cm to	AMP 2N 163-38-B		
K-0001	50-04-0117	5M 01012			ITT
LC-0001	62-01-0128	1 MH	Guarania 16-104 or Guatvan 2307-105		
LC-0002	102-22-0124	1 MH	Filter coil, 150 N		SE
LC-0003	62-01-0128	1 MH	Guarania 16-104 or Guatvan 2307-105		
LC-0004	62-01-0128	1 MH	Guarania 16-104 or Guatvan 2307-105		

STUDER (00) 03/10/12 PB RECORO AMPLIFIER 1.820.712.81 PAGE 2

R..0033 57.11.4153 15 kOhm 2%

S T U O F R (00) H3/10/12 PB RECORD AMPLIFIER 1.820.712.81 PAGE 3

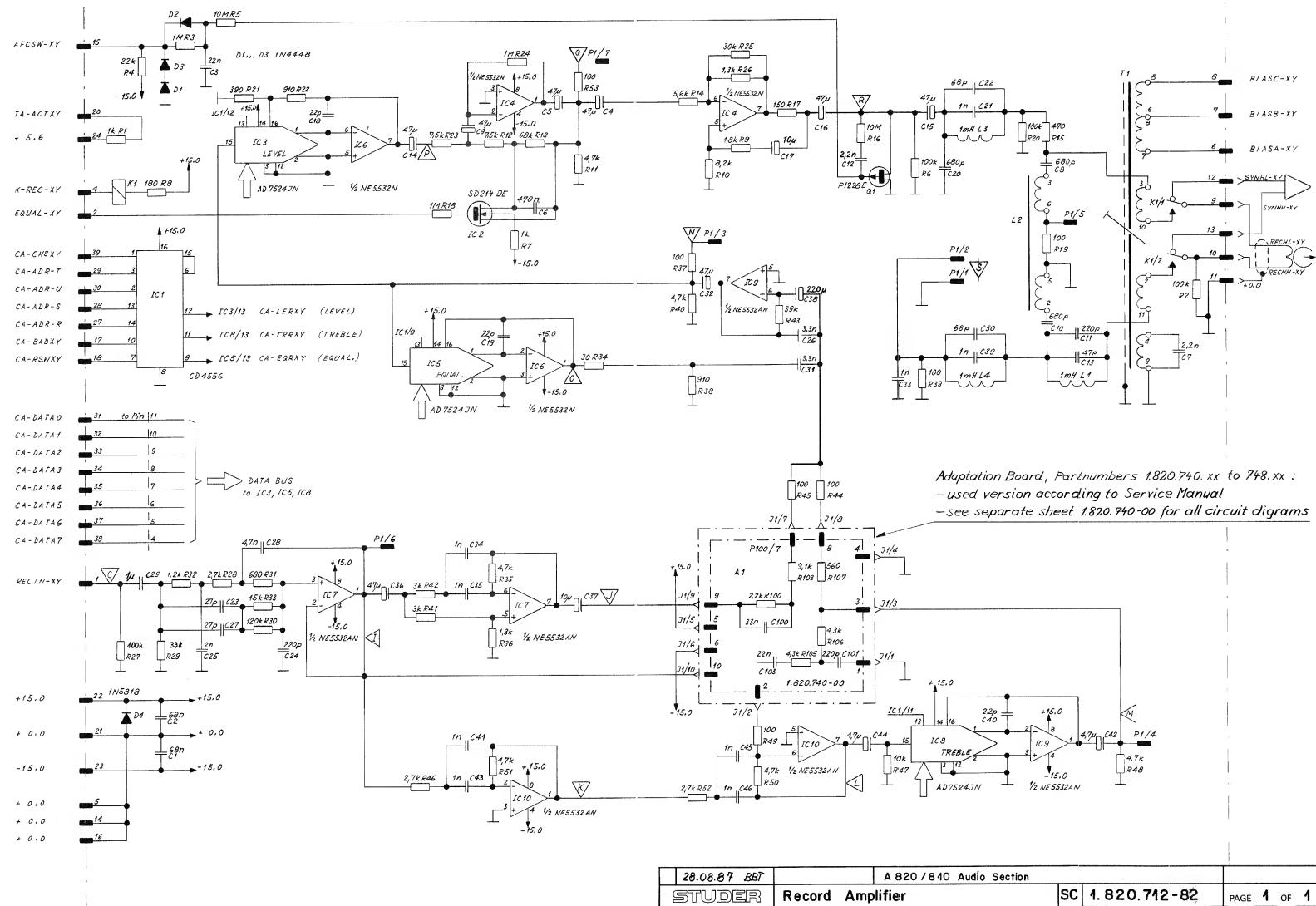
T=0001 1/02/2-213/00 845 Transformers 150 KM St

Ceramics: PET-Polyester; PP-Polypropylene; PS-Polystyrol;
S-Solid aluminum

MANUFACTURERS: ADI-Analog Devices Inc.; Ex-Exar; F-Fairchild;
I-Intermally; M-Materials;
M-Micronuclear Semiconductor; Ph-Philips; Sx-Raytheon;
R-Radio Corp. of America; Ss-Sesconex; Sig-Sigheite;
S-Siliconix; Si-Siliconix; T-Telodyne Semiconductor;
T-Texas Instruments;

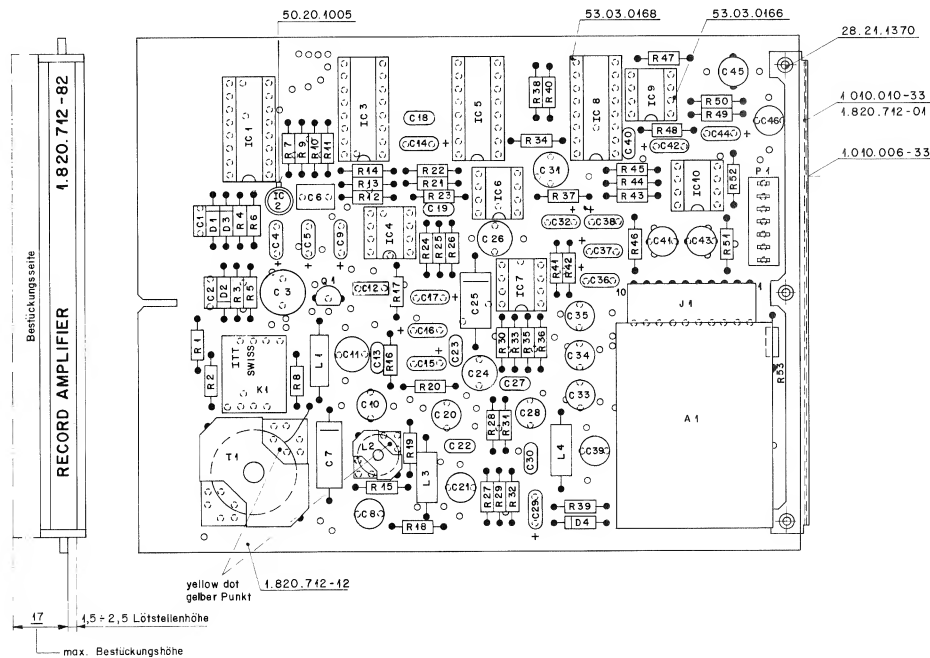
DATE 8/10/12

Record Amplifier 1.820.712-82



28.08.87 BBT	A 820 / 840 Audio Section			
STUDER	Record Amplifier	SC 1.820.712-82	PAGE 4 OF 4	

Record Amplifier 1.820.712-82



IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
P-0001	5W12-0007	7 cont.	AMP Mini Match System Nr. 164 T13-7		
Q-0001	50-23-0329	P122RE	WPI46		Siemens
R-0001	57-11-1102	1 kOhm			
R-0002	57-11-1104	100 kOhm			
R-0003	57-11-1105	1 MOhm			
R-0004	57-11-1123	22 kOhm			
R-0005	57-11-1106	10 MOhm			
R-0006	57-11-1134	100 kOhm			
R-0007	57-11-1107	1 kOhm			
R-0008	57-11-1161	100 Ohm			
R-0009	57-11-1182	1 kOhm			
R-0010	57-11-1182	1 kOhm			
R-0011	57-11-1182	1 kOhm			
R-0012	57-11-1182	1 kOhm			
R-0013	57-11-1182	1 kOhm			
R-0014	57-11-1182	1 kOhm			
R-0015	57-11-1182	1 kOhm			
R-0016	57-11-1182	1 kOhm			
R-0017	57-11-1182	1 kOhm			
R-0018	57-11-1182	1 kOhm			
R-0019	57-11-1182	1 kOhm			
R-0020	57-11-1182	1 kOhm			
R-0021	57-11-1182	1 kOhm			
R-0022	57-11-1182	1 kOhm			
R-0023	57-11-1182	1 kOhm			
R-0024	57-11-1182	1 kOhm			
R-0025	57-11-1182	1 kOhm			
R-0026	57-11-1182	1 kOhm			
R-0027	57-11-1182	1 kOhm			
R-0028	57-11-1182	1 kOhm			
R-0029	57-11-1182	1 kOhm			
R-0030	57-11-1182	1 kOhm			
R-0031	57-11-1182	1 kOhm			
R-0032	57-11-1182	1 kOhm			
R-0033	57-11-1182	1 kOhm			
R-0034	57-11-1182	1 kOhm			
R-0035	57-11-1182	1 kOhm			

STUDER (00) 87/08/29 RD RECORD AMPLIFIER PL 1.820.712-82 PAGE 3

IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R-0036	57-11-1100	10 Ohm			
R-0037	57-11-1102	1 kOhm			
R-0038	57-11-1102	1 kOhm			
R-0039	57-11-1102	1 kOhm			
R-0040	57-11-1102	1 kOhm			
R-0041	57-11-1102	1 kOhm			
R-0042	57-11-1102	1 kOhm			
R-0043	57-11-1102	1 kOhm			
R-0044	57-11-1102	1 kOhm			
R-0045	57-11-1102	1 kOhm			
R-0046	57-11-1102	1 kOhm			
R-0047	57-11-1102	1 kOhm			
R-0048	57-11-1102	1 kOhm			
R-0049	57-11-1102	1 kOhm			
R-0050	57-11-1102	1 kOhm			
R-0051	57-11-1102	1 kOhm			
R-0052	57-11-1102	1 kOhm			
R-0053	57-11-1102	1 kOhm			

STUDER (00) 87/08/29 RD RECORD AMPLIFIER PL 1.820.712-82 PAGE 4

IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
A-0001	see note 1	Adaptation Board			St
C-0001	59-99-0205	88 pf	60V Co		
C-0002	59-99-0205	88 pf	60V Co		
C-0003	59-99-0205	88 pf	150V PP		
C-0004	59-26-0470	47 uF	50V Sol		
C-0005	59-26-0470	47 uF	50V Sol		
C-0006	59-26-0470	47 uF	50V Sol		
C-0007	59-12-1922	2.2 uF	150V PP		
C-0008	59-15-1081	680 pf	50V PP		
C-0009	59-15-1081	680 pf	50V PP		
C-0010	59-15-1081	680 pf	50V PP		
C-0011	59-15-1081	680 pf	50V PP		
C-0012	59-36-0222	2.2 uF	100V PEP		
C-0013	59-15-1081	680 pf	50V PP		
C-0014	59-26-0470	47 uF	6-3V Sol		
C-0015	59-26-0470	47 uF	6-3V Sol		
C-0016	59-26-0470	47 uF	6-3V Sol		
C-0017	59-26-0470	47 uF	6-3V Sol		
C-0018	59-15-1081	680 pf	50V PP		
C-0019	59-15-1081	680 pf	50V PP		
C-0020	59-15-1081	680 pf	50V PP		
C-0021	59-15-1081	680 pf	50V PP		
C-0022	59-15-1081	680 pf	50V PP		
C-0023	59-15-1081	680 pf	50V PP		
C-0024	59-15-1081	680 pf	50V PP		
C-0025	59-15-1081	680 pf	50V PP		
C-0026	59-15-1081	680 pf	50V PP		
C-0027	59-15-1081	680 pf	50V PP		
C-0028	59-15-1081	680 pf	50V PP		
C-0029	59-15-1081	680 pf	50V PP		
C-0030	59-15-1081	680 pf	50V PP		
C-0031	59-15-1081	680 pf	50V PP		
C-0032	59-15-1081	680 pf	50V PP		
C-0033	59-15-1081	680 pf	50V PP		
C-0034	59-15-1081	680 pf	50V PP		
C-0035	59-15-1081	680 pf	50V PP		

STUDER (00) 87/08/29 RD RECORD AMPLIFIER PL 1.820.712-82 PAGE 5

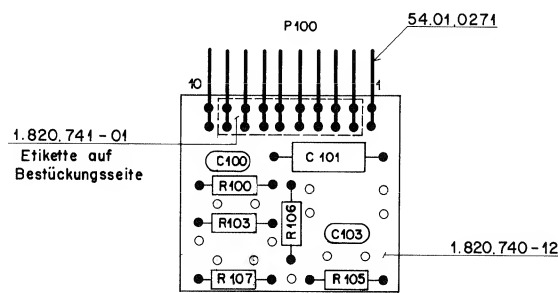
IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C-0036	59-26-0470	47 uF	6-3V Sol		
C-0037	59-26-0470	47 uF	100V Sol		
C-0038	59-26-0470	47 uF	100V Sol		
C-0039	59-26-0470	47 uF	100V Sol		
C-0040	59-26-0470	47 uF	100V Sol		
C-0041	59-26-0470	47 uF	100V Sol		
C-0042	59-26-0470	47 uF	100V Sol		
C-0043	59-26-0470	47 uF	100V Sol		
C-0044	59-26-0470	47 uF	100V Sol		
C-0045	59-26-0470	47 uF	100V Sol		
C-0046	59-26-0470	47 uF	100V Sol		
C-0047	59-26-0470	47 uF	100V Sol		
C-0048	59-26-0470	47 uF	100V Sol		
C-0049	59-26-0470	47 uF	100V Sol		
C-0050	59-26-0470	47 uF	100V Sol		
C-0051	59-26-0470	47 uF	100V Sol		
C-0052	59-26-0470	47 uF	100V Sol		
C-0053	59-26-0470	47 uF	100V Sol		

STUDER (00) 87/08/29 RD RECORD AMPLIFIER PL 1.820.712-82 PAGE 6

IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
J-0001	50-04-0125	100V Sol			
J-0002	50-04-0125	100V Sol			
J-0003	50-04-0125	100V Sol			
J-0004	50-04-0125	100V Sol			
J-0005	50-04-0125	100V Sol			
J-0006	50-04-0125	100V Sol			
J-0007	50-04-0125	100V Sol			
J-0008	50-04-0125	100V Sol			
J-0009	50-04-0125	100V Sol			
J-0010	50-04-0125	100V Sol			
J-0011	50-04-0125	100V Sol			
J-0012	50-04-0125	100V Sol			
J-0013	50-04-0125	100V Sol			
J-0014	50-04-0125	100V Sol			
J-0015	50-04-0125	100V Sol			
J-0016	50-04-0125	100V Sol			
J-0017	50-04-0125	100V Sol			
J-0018	50-04-0125	100V Sol			
J-0019	50-04-0125	100V Sol			
J-0020	50-04-0125	100V Sol			
J-0021	50-04-0125	100V Sol			
J-0022	50-04-0125	100V Sol			
J-0023	50-04-0125	100V Sol			
J-0024	50-04-0125	100V Sol			
J-0025	50-04-0125	100V Sol			
J-0026	50-04-0125	100V Sol			
J-0027	50-04-0125	100V Sol			
J-0028	50-04-0125	100V Sol			
J-0029	50-04-0125	100V Sol			
J-0030	50-04-0125	100V Sol			
J-0031	50-04-0125	100V Sol			
J-0032	50-04-0125	100V Sol			
J-0033	50-04-0125	100V Sol			
J-0034	50-04-0125	100V Sol			
J-0035	50-04-0125	100V Sol			

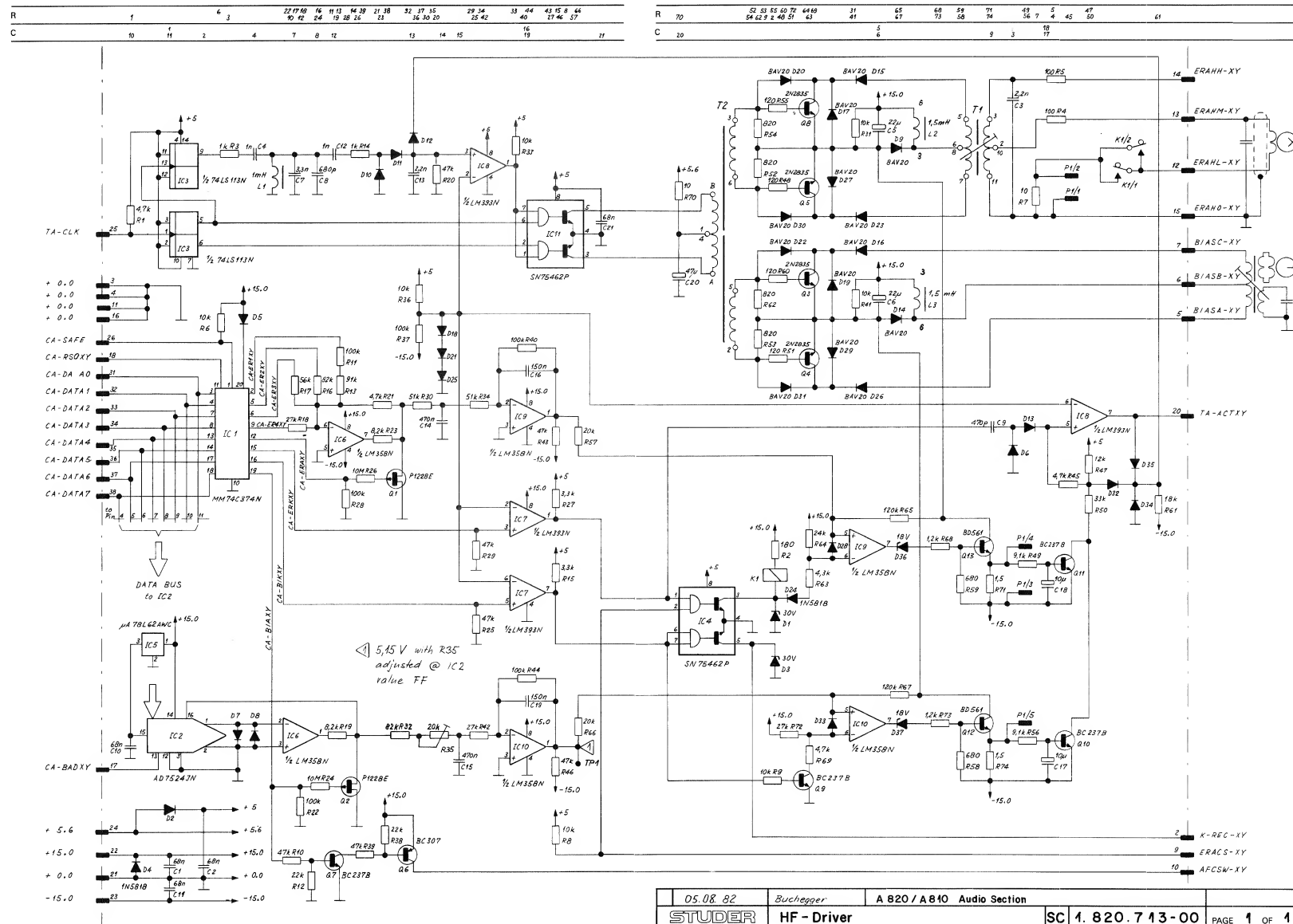
STUDER (00) 87/08/29 RD RECORD AMPLIFIER PL 1.820.712-82 PAGE 7

Adaption Board 1.820.741.00 for 1.318... heads

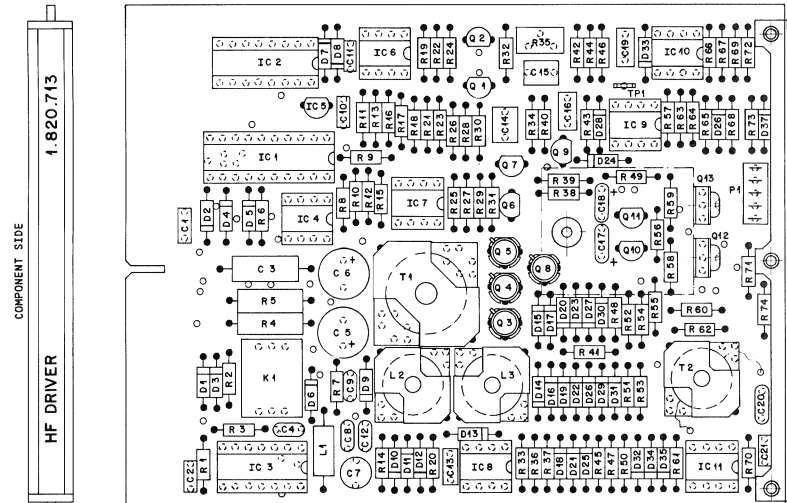


IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0100	59.00.5682	6*8 nF	5%	
	C..0101	59.04.8221	220 pF	5%	
	C..0102		not used		
	C..0103	59.30.5223	22 nF	5%	
	C..0104		not used		
	C..0105		not used		
	P..0100	54.01.0271	10 cont.	AMP-Nr. 163.740-8	
	R..0100	57.11.4472	4.7 kOhm	2%	
	R..0101		not used		
	R..0102		not used		
	R..0103	57.11.4582	6*8 kOhm	2%	
	R..0104		not used		
	R..0105	57.11.3432	4*3 kOhm	1%	
	R..0106	57.11.3432	4*3 kOhm	1%	
	R..0107	57.11.4102	1*0 kOhm	2%	

HF-Driver 1.820.713-00



HF-Driver 1.820.713-00



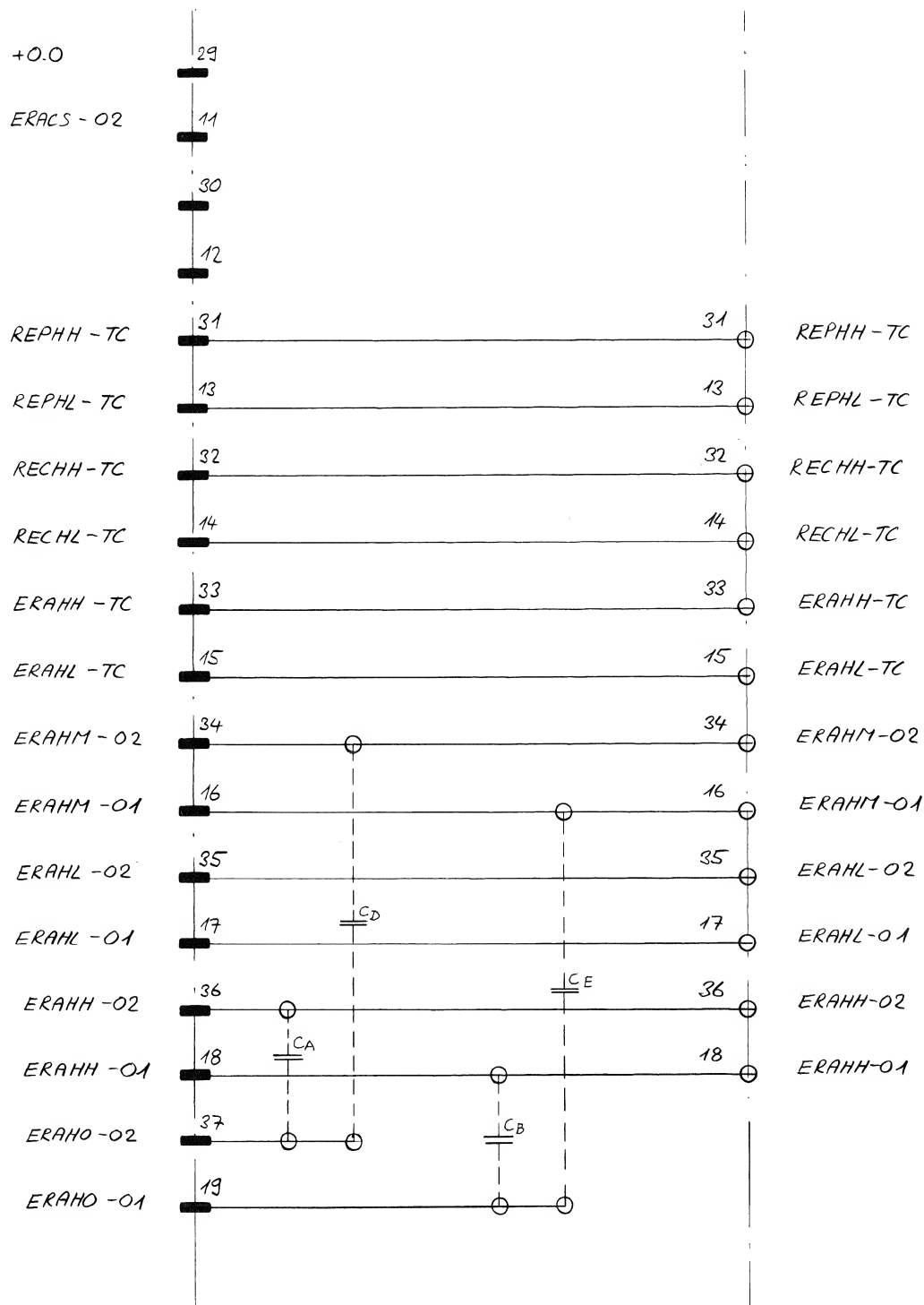
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
		C++0001	59.99.0205	48 nF	-20%	Ce	R++0018	57.11.4273	27 kOhm	2%	
		C++0002	59.99.0205	68 nF	-20%	Ce	R++0019	57.11.4821	8.2 kOhm	2%	
		C++0003	59.12.9222	2.2 nF	1%		R++0020	57.11.4473	47 kOhm	2%	
		C++0004	59.32.4102	1 nF	-20%	Ce	R++0021	57.11.4472	4.7 kOhm	2%	
		C++0005	59.22.0220	22 nF	50V, EI		R++0022	57.11.4104	100 kOhm	2%	
		C++0006	59.22.0220	22 nF	50V, EI		R++0023	57.11.4822	8.2 kOhm	2%	
		C++0007	59.09.1132	3.3 nF	1%	PP	R++0024	57.11.4104	100 kOhm	2%	
		C++0008	59.32.2601	680 pF	-20%	Ce	R++0025	57.11.4473	47 kOhm	2%	
		C++0009	59.32.1471	470 pF	-20%	Ce	R++0026	57.11.4104	100 kOhm	2%	
		C++0010	59.99.0205	48 nF	-20%	Ce	R++0027	57.11.3312	3.3 kOhm	2%	
		C++0011	59.99.0205	48 nF	-20%	Ce	R++0028	57.11.4104	100 kOhm	2%	
		C++0012	59.32.4102	1 nF	-20%	Ce	R++0029	57.11.4473	47 kOhm	2%	
		C++0013	59.36.0222	2.2 nF	10%		R++0030	57.11.4103	10 kOhm	2%	
		C++0014	59.06.5134	470 nF	5%		R++0031	57.11.4823	8.2 kOhm	2%	
		C++0015	59.06.5474	470 nF	5%		R++0032	57.11.3913	51 kOhm	1%	
		C++0016	59.06.5134	470 nF	5%		R++0033	57.11.4103	10 kOhm	2%	
		C++0017	59.26.2100	10 uF	20%, 16V + 5uF	PH	R++0034	57.11.3913	51 kOhm	1%	
		C++0018	59.26.2100	10 uF	20%, 16V + 5uF	PH	R++0035	58.01.7203	20 kOhm	2%	
		C++0019	59.06.5134	470 nF	5%		R++0036	57.11.4103	10 kOhm	2%	
		C++0020	59.26.2100	10 uF	20%, 6.3V + 5uF	PH	R++0037	57.11.4104	100 kOhm	2%	
		C++0021	59.99.0205	48 nF	-20%	Ce	R++0038	57.11.4223	22 kOhm	2%	
		D++0001	50.04.0125	30 V Z	ZP030	ITT	R++0039	57.11.4473	47 kOhm	2%	
		D++0002	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0040	57.11.4104	100 kOhm	2%	
		D++0003	50.04.0125	30 V Z	ZP030	ITT	R++0041	57.11.4103	10 kOhm	2%	
		D++0004	50.04.0125	1W4448	ITT	ITT	R++0042	57.11.4273	27 kOhm	2%	
		D++0005	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0043	57.11.4473	47 kOhm	2%	
		D++0006	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0044	57.11.4104	100 kOhm	2%	
		D++0007	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0045	57.11.4473	47 kOhm	2%	
		D++0008	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0046	57.11.4223	22 kOhm	2%	
		D++0009	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0047	57.11.4473	47 kOhm	2%	
		D++0010	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0048	57.11.4121	120 Ohm	2%	
		D++0011	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0049	57.11.3912	9.1 kOhm	1%	
		D++0012	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0050	57.11.4333	33 kOhm	2%	
		D++0013	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0051	57.11.4221	120 Ohm	2%	
		D++0014	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0052	57.11.4421	820 Ohm	2%	
		D++0015	50.04.0125	1W4448	ITT	ITT/PhySesTI	R++0053	57.11.4421	820 Ohm	2%	

STUDER (02) 83/09/05 BBT HF - DRIVER 1.820.713.00 PAGE 1

STUDER (02) 83/09/05 BBT HF - DRIVER 1.820.713.00 PAGE 4

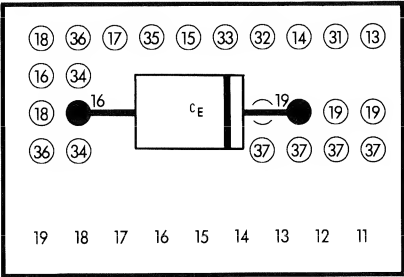
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	D++0016	50.04.0133	BAV20		ITT/Phy		R++0054	57.11.4801	820 Ohm	2%		
	D++0017	50.04.0133	BAV20		ITT/Phy		R++0055	57.11.4121	120 Ohm	2%		
	D++0018	50.04.0133	BAV20		ITT/Phy		R++0056	57.11.3913	9.1 kOhm	1%		
	D++0019	50.04.0133	BAV20		ITT/Phy	1IT/Phy	R++0057	57.11.3203	20 kOhm	1%		
	D++0020	50.04.0133	BAV20		ITT/Phy		R++0058	57.11.4681	680 Ohm	2%		
	D++0021	50.04.0133	BAV20		ITT/Phy	1IT/Phy	R++0059	57.11.4681	680 Ohm	2%		
	D++0022	50.04.0133	BAV20		ITT/Phy		R++0060	57.11.4121	120 Ohm	2%		
	D++0023	50.04.0133	BAV20		ITT/Phy		R++0061	57.11.4121	120 Ohm	2%		
	D++0024	50.04.0132	1N5918	1N5918	ITT/Phy		R++0062	57.11.3913	9.1 kOhm	1%		
	D++0025	50.04.0132	1N5918		ITT/Phy		R++0063	57.11.3203	20 kOhm	1%		
	D++0026	50.04.0133	BAV20		ITT/Phy		R++0064	57.11.4121	120 Ohm	2%		
	D++0027	50.04.0133	BAV20		ITT/Phy		R++0065	57.11.4121	120 Ohm	2%		
	D++0028	50.04.0125	1N5948		ITT/Phy	56.04.0151	R++0066	57.11.4121	120 Ohm	2%		
	D++0029	50.04.0133	BAV20		ITT/Phy		R++0067	57.11.4121	120 Ohm	2%		
	D++0030	50.04.0133	BAV20		ITT/Phy		R++0068	57.11.4121	120 Ohm	2%		
	D++0031	50.04.0133	BAV20		ITT/Phy		R++0069	57.11.4472	470 Ohm	2%		
	D++0032	50.04.0125	1N5948		ITT/Phy	56.04.0151	R++0070	57.11.4159	1.5 Ohm	2%		
	D++0033	50.04.0125	1N5948		ITT/Phy	56.04.0151	R++0071	57.11.4159	1.5 Ohm	2%		
	D++0034	50.04.0125	1N5948		ITT/Phy	56.04.0151	R++0072	57.11.4159	1.5 Ohm	2%		
	D++0035	50.04.0125	1N5948		ITT/Phy	56.04.0151	R++0073	57.11.4121	120 Ohm	2%		
	D++0036	50.04.0125	1N5948		ITT/Phy	56.04.0151	R++0074	57.11.4121	120 Ohm	2%		
	D++0037	50.04.0122	1R 2 V	2.825K 1R, 2.825K 1R, ZPD 1R	ITT/Phy	1E++0001	1.0222.212.00				Erans Transformer, 1500Hz	5t
	D++0038	50.04.0122	1R 2 V	2.825K 1R, 2.825K 1R, ZPD 1R	ITT/Phy	1E++0002	1.0222.211.00				Driver Transformer, 1500Hz	5t
	D++0039	50.04.0122	1R 2 V		ITT/Phy							
	D++0040	50.04.0122	1R 2 V		ITT/Phy							
	D++0041	50.04.0122	1R 2 V		ITT/Phy							
	D++0042	50.04.0122	1R 2 V		ITT/Phy							
	D++0043	50.04.0122	1R 2 V		ITT/Phy							
	D++0044	50.04.0122	1R 2 V		ITT/Phy							
	D++0045	50.04.0122	1R 2 V		ITT/Phy							
	D++0046	50.04.0122	1R 2 V		ITT/Phy							
	D++0047	50.04.0122	1R 2 V		ITT/Phy							
	D++0048	50.04.0122	1R 2 V		ITT/Phy							
	D++0049	50.04.0122	1R 2 V		ITT/Phy							
	D++0050	50.04.0122	1R 2 V		ITT/Phy							
	D++0051	50.04.0122	1R 2 V		ITT/Phy							
	D++0052	50.04.0122	1R 2 V		ITT/Phy							
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	D++0056	50.04.0122	1R 2 V		ITT/Phy							
	D++0057	50.04.0122	1R 2 V		ITT/Phy							
	D++0058	50.04.0122	1R 2 V		ITT/Phy							
	D++0059	50.04.0122	1R 2 V		ITT/Phy							
	D++0060	50.04.0122	1R 2 V		ITT/Phy							
	D++0061	50.04.0122	1R 2 V		ITT/Phy							
	D++0062	50.04.0122	1R 2 V		ITT/Phy							
	D++0063	50.04.0122	1R 2 V		ITT/Phy							
	D++0064	50.04.0122	1R 2 V		ITT/Phy							
	D++0065	50.04.0122	1R 2 V		ITT/Phy							
	D++0066	50.04.0122	1R 2 V		ITT/Phy							
	D++0067	50.04.0122	1R 2 V		ITT/Phy							
	D++0068	50.04.0122	1R 2 V		ITT/Phy							
	D++0069	50.04.0122	1R 2 V		ITT/Phy							
	D++0070	50.04.0122	1R 2 V		ITT/Phy							
	D++0071	50.04.0122	1R 2 V		ITT/Phy							
	D++0072	50.04.0122	1R 2 V		ITT/Phy							
	D++0073	50.04.0122	1R 2 V		ITT/Phy							
	D++0074	50.04.0122	1R 2 V		ITT/Phy							
	D++0075	50.04.0122	1R 2 V		ITT/Phy							
	D++0076	50.04.0122	1R 2 V		ITT/Phy							
	D++0077	50.04.0122	1R 2 V		ITT/Phy							
	D++0078	50.04.0122	1R 2 V		ITT/Phy							
	D++0079	50.04.0122	1R 2 V		ITT/Phy							
	D++0080	50.04.0122	1R 2 V		ITT/Phy							
	D++0081	50.04.0122	1R 2 V		ITT/Phy							
	D++0082	50.04.0122	1R 2 V		ITT/Phy							
	D++0083	50.04.0122	1R 2 V		ITT/Phy							
	D++0084	50.04.0122	1R 2 V		ITT/Phy							
	D++0085	50.04.0122	1R 2 V		ITT/Phy							
	D++0086	50.04.0122	1R 2 V		ITT/Phy							
	D++0087	50.04.0122	1R 2 V		ITT/Phy							
	D++0088	50.04.0122	1R 2 V		ITT/Phy							
	D++0089	50.04.0122	1R 2 V		ITT/Phy							
	D++0090	50.04.0122	1R 2 V		ITT/Phy							
	D++0091	50.04.0122	1R 2 V		ITT/Phy							
	D++0092	50.04.0122	1R 2 V		ITT/Phy							
	D++0093	50.04.0122	1R 2 V		ITT/Phy							
	D++0094	50.04.0122	1R 2 V		ITT/Phy							
	D++0095	50.04.0122	1R 2 V		ITT/Phy							
	D++0096	50.04.0122	1R 2 V		ITT/Phy							
	D++0097	50.04.0122	1R 2 V		ITT/Phy							
	D++0098	50.04.0122	1R 2 V		ITT/Phy							
	D++0099	50.04.0122	1R 2 V		ITT/Phy							
	D++0100	50.04.0122	1R 2 V		ITT/Phy							
	D++0101	50.04.0122	1R 2 V		ITT/Phy							
	D++0102	50.04.0122	1R 2 V		ITT/Phy							
	D++0103	50.04.0122	1R 2 V		ITT/Phy							
	D++0104	50.04.0122	1R 2 V		ITT/Phy							
	D++0105	50.04.0122	1R 2 V		ITT/Phy							
	D++0106	50.04.0122	1R 2 V		ITT/Phy							
	D++0107	50.04.0122	1R 2 V		ITT/Phy							
	D++0108	50.04.0122	1R 2 V		ITT/Phy							
	D++0109	50.04.0122	1R 2 V		ITT/Phy							
	D++0110	50.04.0122	1R 2 V		ITT/Phy							
	D++0111	50.04.0122	1R 2 V		ITT/Phy							
	D++0112	50.04.0122	1R 2 V		ITT/Phy							
	D++0113	50.04.0122	1R 2 V		ITT/Phy							
	D++0114	50.04.0122	1R 2 V		ITT/Phy							
	D++0115	50.04.0122	1R 2 V		ITT/Phy							
	D++0116	50.04.0122	1R 2 V		ITT/Phy							
	D++0117	50.04.0122	1R 2 V		ITT/Phy							
	D++0118	50.04.0122	1R 2 V		ITT/Phy							
	D++0119	50.04.0122	1R 2 V		ITT/Phy							
	D++0120	50.04.0122	1R 2 V		ITT/Phy							
	D++0121	50.04.0122	1R 2 V		ITT/Phy							
	D++0122	50.04.0122	1R 2 V		ITT/Phy							
	D++0123	50.04.0122	1R 2 V		ITT/Phy							
	D++0124	50.04.0122	1R 2 V		ITT/Phy							
	D++0125	50.04.0122	1R 2 V		ITT/Phy							
	D++0126	50.04.0122	1R 2 V		ITT/Phy							
	D++0127	50.04.0122	1R 2 V		ITT/Phy							
	D++0128	50.04.0122	1R 2 V		ITT/Phy							
	D++0129	50.04.0122	1R 2 V		ITT/Phy							
	D++0130	50.04.0122	1R 2 V		ITT/Phy							
	D++0131	50.04.0122	1R 2 V		ITT/Phy							
	D++0132	50.04.0122	1R 2 V		ITT/Phy							
	D++0133	50.04.0122	1R 2 V		ITT/Phy							
	D++0134	50.04.0122	1R 2 V		ITT/Phy							
	D++0135	50.04.0122	1R 2 V		ITT/Phy							
	D++0136	50.04.0122	1R 2 V		ITT/Phy							
	D++0137	50.04.0122	1R 2 V		ITT/Phy							
	D++0138	50.04.0122	1R 2 V		ITT/Phy							
	D++0139	50.04.0122	1R 2 V		ITT/Phy							
	D++0140	50.04.0122	1R 2 V		ITT/Phy							
	D++0141	50.04.0122	1R 2 V		ITT/Phy							
	D++0142	50.04.0122	1R 2 V		ITT/Phy							
	D++0143	50.04.0122	1R 2 V		ITT/Phy							
	D++0144	50.04.0122	1R 2 V		ITT/Phy							
	D++0145	50.04.0122	1R 2 V		ITT/Phy							
	D++0146	50.04.0122	1R 2 V		ITT/Phy							
	D++0147	50.04.0122	1R 2 V		ITT/Phy							
	D++0148	50.04.0122	1R 2 V		ITT/Phy							
	D++0149	50.04.0122	1R 2 V		ITT/Phy							
	D++0150	50.04.0122	1R 2 V		ITT/Phy							
	D++0151	50.04.0122	1R 2 V		ITT/Phy							
	D++0152	50.04.0122	1R 2 V		ITT/Phy							
	D++0153	50.04.0122	1R 2 V		ITT/Phy							
	D++0154	50.04.0122	1R 2 V		ITT							

Erase Head Connector



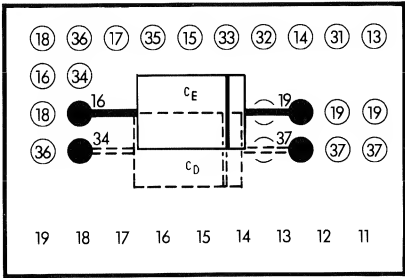
① 270285 We	○ ..	○ ..	○ ..	○ ..
	A 820 Audio Section			PAGE 1 OF 1
STUDER	Erase Head Connector			SC

Erase Head Connector



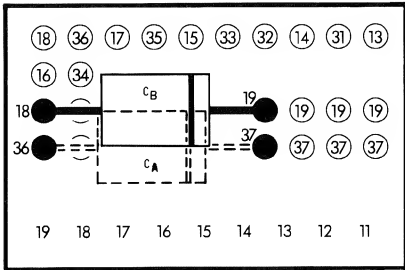
- FOR A820 MONO VERSIONS AND STEREO VERSIONS WITHOUT VU-METERS
(A820-1, A820-1 VU, A820-0.75, A820-2 F)

POS. NO.	PART NO.	VALUE	SPECIFICATIONS	CONNECTED TO	PIN NO. 11 GROUNDED
C _E	59.04.9332	3.3 nF	5 %, 630 V, PP	Points 16/19	YES



- FOR A820 STEREO VERSION WITH VU-METERS, 2-CHANNEL VERSIONS, AND
2-CHANNEL VERSIONS WITH TIME CODE
(A820-0.75 VU, A820-2, A820-2 VU, A820-2/2 VU, A820-2 TC,
A820-2 TC VU)

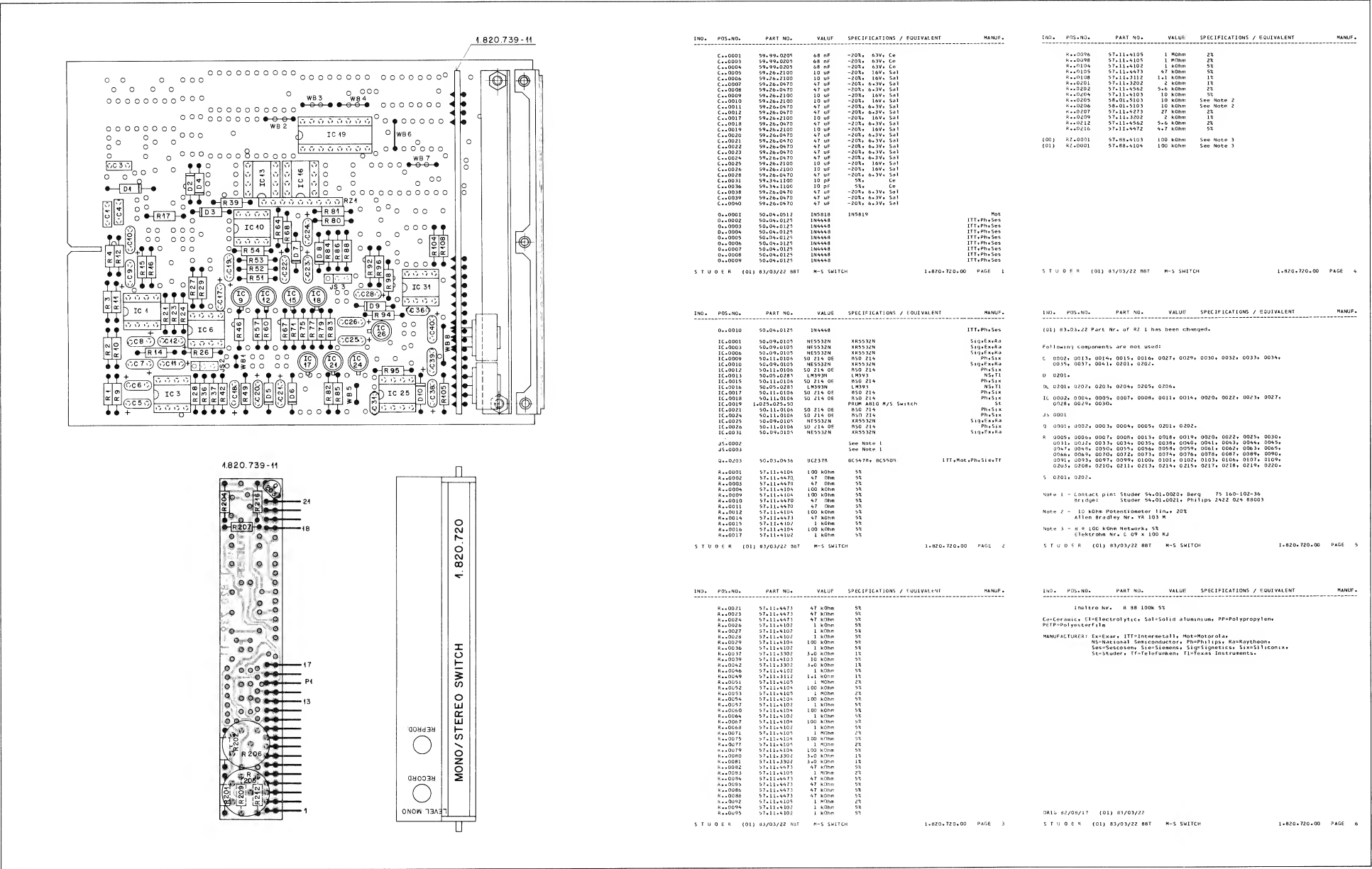
POS. NO.	PART NO.	VALUE	SPECIFICATIONS	CONNECTED TO	PIN NO. 11 GROUNDED
C _D	59.04.9332	3.3 nF	5 %, 630 V, PP	Points 34/37	NO
C _E	59.04.9332	3.3 nF	5 %, 630 V, PP	Points 16/19	



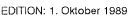
- FOR A820 1/2" 2-CHANNEL VERSIONS
(A820-2/2-1/2" VU, A820-2/2-1/2" TC VU)

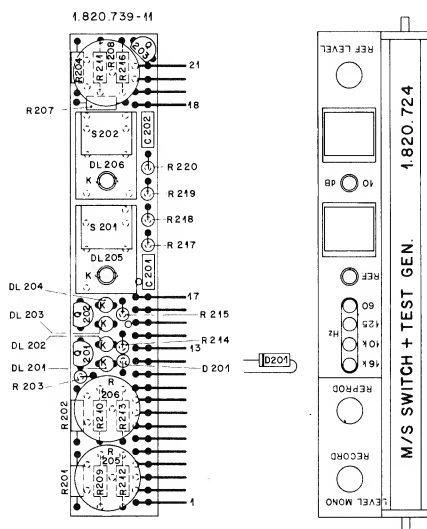
POS. NO.	PART NO.	VALUE	SPECIFICATIONS	CONNECTED TO	PIN NO. 11 GROUNDED
C _A	59.04.9271	270 pF	5 %, 630 V, PP	Points 36/37	NO
C _B	59.04.9271	270 pF	5 %, 630 V, PP	Points 18/19	

Mono Stereo Switch 1.820.720-00



IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C-0001	59.99.0209	68 nF	-20%	83V, Co		K-009A	57.11.4105	1 Mohm	2%		
C-0003	59.99.0208	68 nF	-20%	83V, Co		K-009B	57.11.4105	1 Mohm	2%		
C-0004	59.99.0203	68 nF	-20%	83V, Co		K-010A	57.11.4102	1 kOhm	5%		
C-0005	59.26.2100	10 uF	-20%	16V, Sal		K-010B	57.11.4173	47 kOhm	5%		
C-0006	59.26.2100	10 uF	-20%	16V, Sal		K-010H	57.11.3112	1-1 kOhm	1%		
C-0007	59.26.0470	47 uF	-20%	63V, Sal		K-0201	57.11.3202	2 kOhm	1%		
C-0008	59.26.0470	47 uF	-20%	63V, Sal		K-0202	57.11.4562	5-6 kOhm	2%		
C-0009	59.26.2100	10 uF	-20%	16V, Sal		K-0204	57.11.3103	10 kOhm	5%		
C-0010	59.26.2100	10 uF	-20%	16V, Sal		K-0205	58.01.5103	10 kOhm	See Note 2		
C-0011	59.26.0470	47 uF	-20%	63V, Sal		K-0206	58.01.5103	10 kOhm	See Note 2		
C-0012	59.26.0470	47 uF	-20%	63V, Sal		K-0207	57.11.4273	27 kOhm	2%		
C-0017	59.26.2100	10 uF	-20%	16V, Sal		K-0209	57.11.3202	2 kOhm	1%		
C-0018	59.26.0470	47 uF	-20%	63V, Sal		K-0212	57.11.4562	5-6 kOhm	2%		
C-0019	59.26.2100	10 uF	-20%	16V, Sal		K-0216	57.11.4172	4-7 kOhm	5%		
C-0020	59.26.0470	47 uF	-20%	63V, Sal		(01) K-0201	57.88.4103	100 kOhm	See Note 3		
C-0021	59.26.0470	47 uF	-20%	63V, Sal		(01) K-0201	57.88.4104	100 kOhm	See Note 3		
C-0022	59.26.0470	47 uF	-20%	63V, Sal							
C-0023	59.26.0470	47 uF	-20%	63V, Sal							
C-0024	59.26.0470	47 uF	-20%	63V, Sal							
C-0025	59.26.2100	10 uF	-20%	16V, Sal							
C-0026	59.26.2100	10 uF	-20%	16V, Sal							
C-0028	59.26.0470	47 uF	-20%	63V, Sal							
C-0031	59.24.1100	10 pF	5%	Co							
C-0036	59.34.1100	10 pF	5%	Co							
C-0038	59.26.0470	47 uF	-20%	63V, Sal							
C-0039	59.26.0470	47 uF	-20%	63V, Sal							
C-0040	59.26.0470	47 uF	-20%	63V, Sal							
C-0001	50.04.0512	1N5818	1N5819		Mot						
C-0002	50.04.0125	1N4448			ITT+Ph+Sen						
C-0003	50.04.0125	1N4448			ITT+Ph+Sen						
C-0004	50.04.0125	1N4448			ITT+Ph+Sen						
C-0005	50.04.0125	1N4448			ITT+Ph+Sen						
C-0006	50.04.0125	1N4448			ITT+Ph+Sen						
C-0007	50.04.0125	1N4448			ITT+Ph+Sen						
C-0008	50.04.0125	1N4448			ITT+Ph+Sen						
C-0009	50.04.0125	1N4448			ITT+Ph+Sen						
S T U D E R	(01) 83/03/22 RBT	M-S SWITCH		1.820.720-00	PAGE 1	S T U D E R	(01) 83/03/22 RBT	M-S SWITCH		1.820.720-00	PAGE 4
IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C-0010	50.04.0125	1N4448			ITT+Ph+Sen						
IC-0001	50.09.0105	NE5532N	KR5532N		Sig+Ex+R						
IC-0003	50.09.0105	NE5532N	KR5532N		Sig+Ex+R						
IC-0006	50.09.0105	NE5532N	KR5532N		Sig+Ex+R						
IC-0009	50.11.0104	50 214 OE	R50 214		Ph+Sen						
IC-0010	50.09.0105	NE5532N	KR5532N		Sig+Ex+R						
IC-0012	50.11.0104	50 214 OE	R50 214		Ph+Sen						
IC-0013	50.09.0105	NE5532N	KR5532N		Ph+Sen						
IC-0015	50.11.0104	50 214 OE	R50 214		Ph+Sen						
IC-0016	50.09.0105	NE5532N	KR5532N		Ph+Sen						
IC-0017	50.11.0104	50 214 OE	R50 214		Ph+Sen						
IC-0018	50.11.0104	50 214 OE	R50 214		Ph+Sen						
IC-0019	1-025.025-50	50 214 OE	R50 214		Ph+Sen						
IC-0021	50.11.0104	50 214 OE	R50 214		Ph+Sen						
IC-0024	50.11.0104	50 214 OE	R50 214		Ph+Sen						
IC-0025	50.09.0105	NE5532N	KR5532N		Sig+Ex+R						
IC-0026	50.11.0104	50 214 OE	R50 214		Ph+Sen						
IC-0031	50.09.0105	NE5532N	KR5532N		Sig+Ex+R						
J5-0002			See Note 1								
J5-0003			See Note 1								
Q-0203	50.03.0436	BC237R	BC347R, BC590N		ITT+Ph+Sen+St						
R-0001	57.11.4104	100 kOhm	5%								
R-0002	57.11.4470	47 Ohm	5%								
R-0003	57.11.4470	47 Ohm	5%								
R-0004	57.11.4104	100 kOhm	5%								
R-0009	57.11.4104	100 kOhm	5%								
R-0010	57.11.4470	47 Ohm	5%								
R-0011	57.11.4470	47 Ohm	5%								
R-0012	57.11.4104	100 kOhm	5%								
R-0014	57.11.4473	47 kOhm	5%								
R-0015	57.11.4102	1 kOhm	5%								
R-0016	57.11.4104	100 kOhm	5%								
R-0017	57.11.4102	1 kOhm	5%								
S T U D E R	(01) 83/03/22 RBT	M-S SWITCH		1.820.720-00	PAGE 2	S T U D E R	(01) 83/03/22 RBT	M-S SWITCH		1.820.720-00	PAGE 5
IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R-0021	57.11.4471	47 kOhm	5%								
R-0023	57.11.4471	47 kOhm	5%								
R-0024	57.11.4471	47 kOhm	5%								
R-0026	57.11.4102	1 kOhm	5%								
R-0027	57.11.4102	1 kOhm	5%								
R-0028	57.11.4102	1 kOhm	5%								
R-0029	57.11.4104	100 kOhm	5%								
R-0036	57.11.4102	1 kOhm	5%								
R-0037	57.11.3302	3-6 kOhm	1%								
R-0039	57.11.4102	1 kOhm	5%								
R-0042	57.11.3302	3-6 kOhm	1%								
R-0046	57.11.4102	1 kOhm	5%								
R-0049	57.11.3112	1-1 kOhm	1%								
R-0051	57.11.4105	1 Mohm	2%								
R-0052	57.11.4104	100 kOhm	5%								
R-0053	57.11.4105	1 Mohm	2%								
R-0054	57.11.4104	100 kOhm	5%								
R-0057	57.11.4102	1 kOhm	5%								
R-0060	57.11.4104	100 kOhm	5%								
R-0064	57.11.4104	100 kOhm	5%								
R-0067	57.11.4104	100 kOhm	5%								
R-0068	57.11.4102	1 kOhm	5%								
R-0071	57.11.4105	1 Mohm	2%								
R-0075	57.11.4104	100 kOhm	5%								
R-0077	57.11.4105	1 Mohm	2%								
R-0079	57.11.4104	100 kOhm	5%								
R-0080	57.11.3302	3-6 kOhm	1%								
R-0081	57.11.3302	3-6 kOhm	1%								
R-0082	57.11.4471	47 kOhm	5%								
R-0083	57.11.4105	1 Mohm	2%								
R-0084	57.11.4471	47 kOhm	5%								
R-0085	57.11.4471	47 kOhm	5%								
R-0086	57.11.4471	47 kOhm	5%								
R-0087	57.11.4471	47 kOhm	5%								
R-0088	57.11.4471	47 kOhm	5%								
R-0089	57.11.4105	1 Mohm	2%								
R-0094	57.11.4103	1 kOhm	5%								
R-0095	57.11.4102	1 kOhm	5%								
S T U D E R	(01) 83/03/22 RBT	M-S SWITCH		1.820.720-00	PAGE 3	S T U D E R	(01) 83/03/22 RBT	M-S SWITCH		1.820.720-00	PAGE 6
IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R-0001	57.11.4471	47 kOhm	5%								
R-0002	57.11.4471	47 kOhm	5%								
R-0003	57.11.4471	47 kOhm	5%								
R-0004	57.11.4102	1 kOhm	5%								
R-0005	57.11.4102	1 kOhm	5%								
R-0006	57.11.4102	1 kOhm	5%								
R-0007	57.11.4102	1 kOhm	5%								
R-0008	57.11.4102	1 kOhm	5%								
R-0009	57.11.4102	1 kOhm	5%								
R-0010	57.11.4102	1 kOhm	5%								
R-0011	57.11.4102	1 kOhm	5%								
R-0012	57.11.4102	1 kOhm	5%								
R-0013	57.11.4102	1 kOhm	5%								
R-0014	57.11.4102	1 kOhm	5%								
R-0015	57.11.4102	1 kOhm	5%								
R-0016	57.11.4102	1 kOhm	5%								
R-0017	57.11.4102	1 kOhm	5%								
R-0018	57.11.4102	1 kOhm	5%								
R-0019	57.11.4102	1 kOhm	5%								
R-0020	57.11.4102	1 kOhm	5%								
R-0021											





NO.	POD=NO23	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Q-00203	50A-03-0435	8C2378	8C5478	8C5509	ITT-Mott-PHysics-ITT
R-00001	57-11-14126	100 KOhm	5%		
R-00002	57-11-14677	500 KOhm	5%		
R-00003	57-11-14677	80 K Ohm	5%		
R-00004	57-11-14677	100 KOhm	5%		
R-00005	57-11-15312	5.4 K Ohm	1%		
R-00006	57-11-15911	5.4 K Ohm	5%		
R-00007	57-11-1912	9.4 K Ohm	5%		
R-00008	80A-01-7501	50 Ohm		Spec note 2	
R-00009	57-11-14677	100 KOhm	5%		
R-00010	57-11-14677	50 Ohm	5%		
R-00011	57-11-14677	100 K Ohm	5%		
R-00012	57-11-14677	50 Ohm	5%		
R-00013	57-11-14677	100 K Ohm	5%		
R-00014	57-11-14677	50 Ohm	5%		
R-00015	57-11-14677	47 Ohm	5%		
R-00016	57-11-14677	47 Ohm	5%		
R-00017	57-11-14677	100 K Ohm	5%		
R-00018	57-11-14677	100 K Ohm	5%		
R-00019	57-11-14677	100 K Ohm	5%		
R-00020	58A-01-0501	500 Ohm		Spec note 3	
R-00021	57-11-14677	500 K Ohm	5%		
R-00022	57-11-14126	120 K Ohm	5%		
R-00023	57-11-14677	47 K Ohm	5%		
R-00024	57-11-14126	47 K Ohm	5%		
R-00025	57-11-14677	47 K Ohm	5%		
R-00026	57-11-14102	1 K Ohm	5%		
R-00027	57-11-14102	10 K Ohm	5%		
R-00028	57-11-14102	100 K Ohm	5%		
R-00029	57-11-14102	100 K Ohm	5%		
R-00030	57-11-14102	100 Ohm	5%		
R-00031	57-11-13677	4.7 K Ohm	5%		
R-00032	57-11-14102	1.0 K Ohm	5%		
R-00033	57-11-14102	1.0 K Ohm	5%		
R-00034	57-11-14273	27 K Ohm	5%		
R-00035	57-11-14702	7.5 K Ohm	5%		

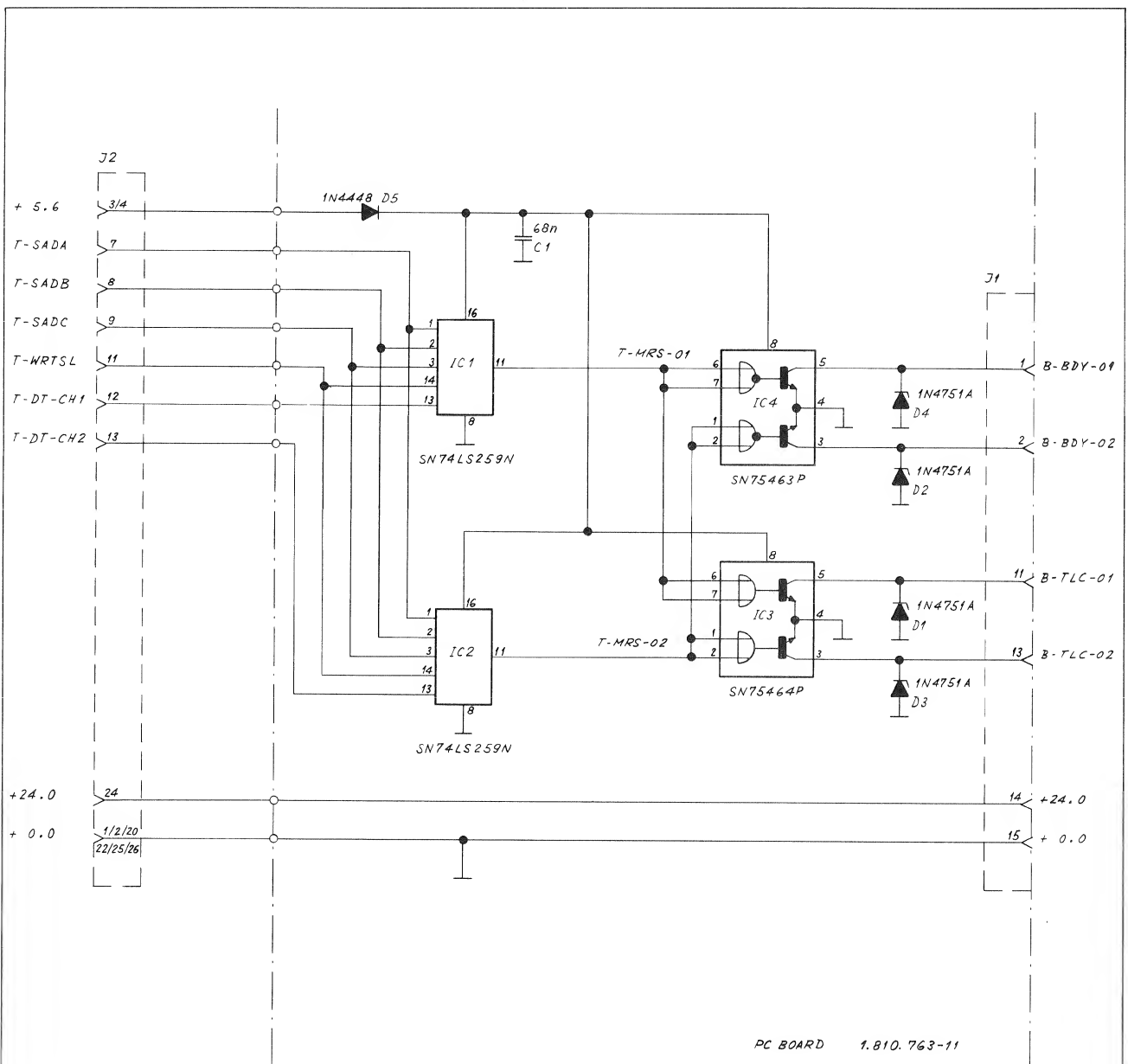
NO.	PDs:NDs	PART NDs	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R#0036	57+11+4102	1	1 Ktmm	5A	
R#0037	57+11+3502	3+0	1 Ktmm	5A	
R#0038	57+11+4105	1	1 Ktmm	5A	
R#0039	57+11+4105	1	1 Ktmm	5A	
R#0040	57+11+3302	3+0	1 Ktmm	5A	
R#0041	57+11+3304	1	1 Ktmm	5A	
R#0042	57+11+3302	3+0	1 Ktmm	5A	
R#0043	57+11+4105	1	1 Ktmm	5A	
R#0044	57+11+3754	750	1 Ktmm	5A	
R#0045	57+11+3457	6+7	1 Ktmm	5A	
R#0046	57+11+4102	1	1 Ktmm	5A	
R#0047	57+11+3757	7+9	1 Ktmm	5A	
R#0048	57+11+3605	1	1 Ktmm	5A	
R#0049	57+11+3112	1+1	1 Ktmm	5A	
R#0050	57+11+4105	1	1 Ktmm	5A	
R#0051	57+11+4105	1	1 Ktmm	5A	
R#0052	57+11+4105	1	1 Ktmm	5A	
R#0053	57+11+4105	1	1 Ktmm	5A	
R#0054	57+11+4105	1	1 Ktmm	5A	
R#0055	57+11+3633	6+3	1 Ktmm	5A	
R#0056	57+11+4105	1	1 Ktmm	5A	
R#0057	57+11+4102	1	1 Ktmm	5A	
R#0058	57+11+4102	1+5	1 Ktmm	5A	
R#0059	57+11+4107	1	1 Ktmm	5A	
R#0060	57+11+4102	1	1 Ktmm	5A	
R#0061	57+11+4102	1	1 Ktmm	5A	
R#0062	57+11+4102	1+5	1 Ktmm	5A	
R#0063	57+11+4105	1	1 Ktmm	5A	
R#0064	57+11+4102	1	1 Ktmm	5A	
R#0065	57+11+4102	1+5	1 Ktmm	5A	
R#0066	57+11+4102	1	1 Ktmm	5A	
R#0067	57+11+4106	1	1 Ktmm	5A	
R#0068	57+11+4102	1	1 Ktmm	5A	
R#0069	57+11+4102	1	1 Ktmm	5A	
R#0070	57+11+4102	1+5	1 Ktmm	5A	
R#0071	57+11+4105	1	1 Ktmm	5A	
R#0072	57+11+4102	1+5	1 Ktmm	5A	

NO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUAL
8	0073	57-11-4102	1 KtHm		13
9	0074	57-11-3737	100 Dm		13
9	0075	57-11-4103	1 KtHm		13
9	0076	57-11-4102	1 KtHm		13
9	0077	57-11-4102	1 KtHm		13
9	0078	57-11-4102	1 KtHm		13
9	0079	57-11-4102	2.7 KtHm		23
9	0080	57-11-4102	1 KtHm		13
9	0081	57-11-3737	3.0 KtHm		13
9	0082	57-11-4103	47 KtHm		23
9	0083	57-11-4103	1 Mthm		23
9	0084	57-11-4103	47 KtHm		23
9	0085	57-11-4103	47 KtHm		23
9	0086	57-11-4103	47 KtHm		23
9	0087	57-11-4103	100 KtHm		23
9	0088	57-11-4103	47 KtHm		23
9	0089	57-11-4105	1 Mthm		23
9	0090	57-11-4105	33 KtHm		23
9	0091	57-11-4105	100 KtHm		23
9	0092	57-11-4105	1 Mthm		23
9	0093	57-11-3737	3-3 KtHm		13
9	0094	57-11-4102	1 KtHm		23
9	0095	57-11-4102	100 KtHm		23
9	0096	57-11-4105	1 Mthm		23
9	0097	57-11-4105	4-7 KtHm		23
9	0098	57-11-4105	1 Mthm		23
9	0099	57-11-4105	180 KtHm		23
9	0100	57-11-4105	1 Mthm		23
9	0101	57-11-3737	750 Dm		13
9	0102	57-11-4123	12 KtHm		13
9	0103	57-11-3333	3-3 KtHm		13
9	0104	57-11-4104	180 KtHm		23
9	0105	57-11-4104	47 KtHm		23
9	0106	57-11-4105	1 Mthm		23
9	0107	57-11-4077	2-7 KtHm		13
9	0108	57-11-3112	1-1 KtHm		13
9	0109	57-11-4103	33 KtHm		23

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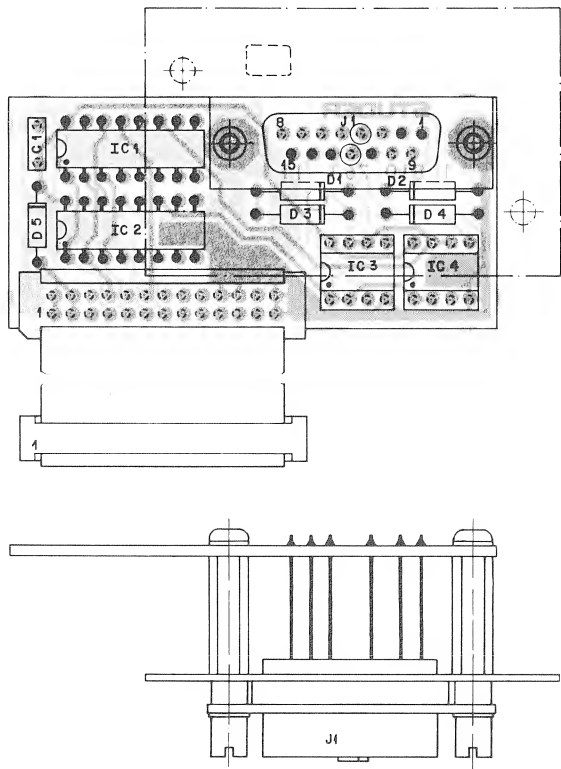
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MANUFACTURER: [a=Esar, ltf=InterMetal, Mot=Motorola, NS=National Semiconductor, Phr=Philips, Ra=Raytheon, Sas=Spacacom, Ser=Siemens, Stp=Stigmatics, St=Stoney, Six=Siliconix, Tff=Telefunken, Tlf=Texas Instruments,					

Noise Reduction System Control 1.810.763-81



22.04.83	Buchegger	A 810 Logic Section	
STUDER	Noise Reduction System Control	SC 1.810.763-81	PAGE 1 OF 1

Noise Reduction System Control 1.810.763-81



IND.	PDS-Nº	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59-99-0205	68 nF	-20%, Ce	
	D..0001	50-04-1506	30 V Z	BZX61C30, BZV85C30, ZY30, 1N4751A	ITT, Mot, Ph
	D..0002	50-04-1506	30 V Z	BZX61C30, BZV85C30, ZY30, 1N4751A	ITT, Mot, Ph
	D..0003	50-04-1506	30 V Z	BZX61C30, BZV85C30, ZY30, 1N4751A	ITT, Mot, Ph
	D..0004	50-04-1506	30 V Z	BZX61C30, BZV85C30, ZY30, 1N4751A	ITT, Mot, Ph
	D..0005	50-04-0125	1N4448		ITT, Ph, Ses, TI
	IC..0001	50-06-0259	SN74LS259N		Fc, Mot, TI
	IC..0002	50-06-0259	SN74LS259N		Fc, Mot, TI
	IC..0003	50-05-0204	SN75464P		NSC, TI
	IC..0004	50-05-0203	SN75463P		NSC, TI
	J..0001	54-02-0183	15 cont.	See note 1	
	J..0002	54-14-5022	26 cont.	See note 2	

Note 1 - Jack: TRW Nr. DA-15 S (Cannon)
Note 2 - Jack: Yamaha Nr. FAS-26-17
Burndy Nr. FRS-26 80-7P
Connection cable: Studer Nr. 1.810.749.00

Ce=Ceramic

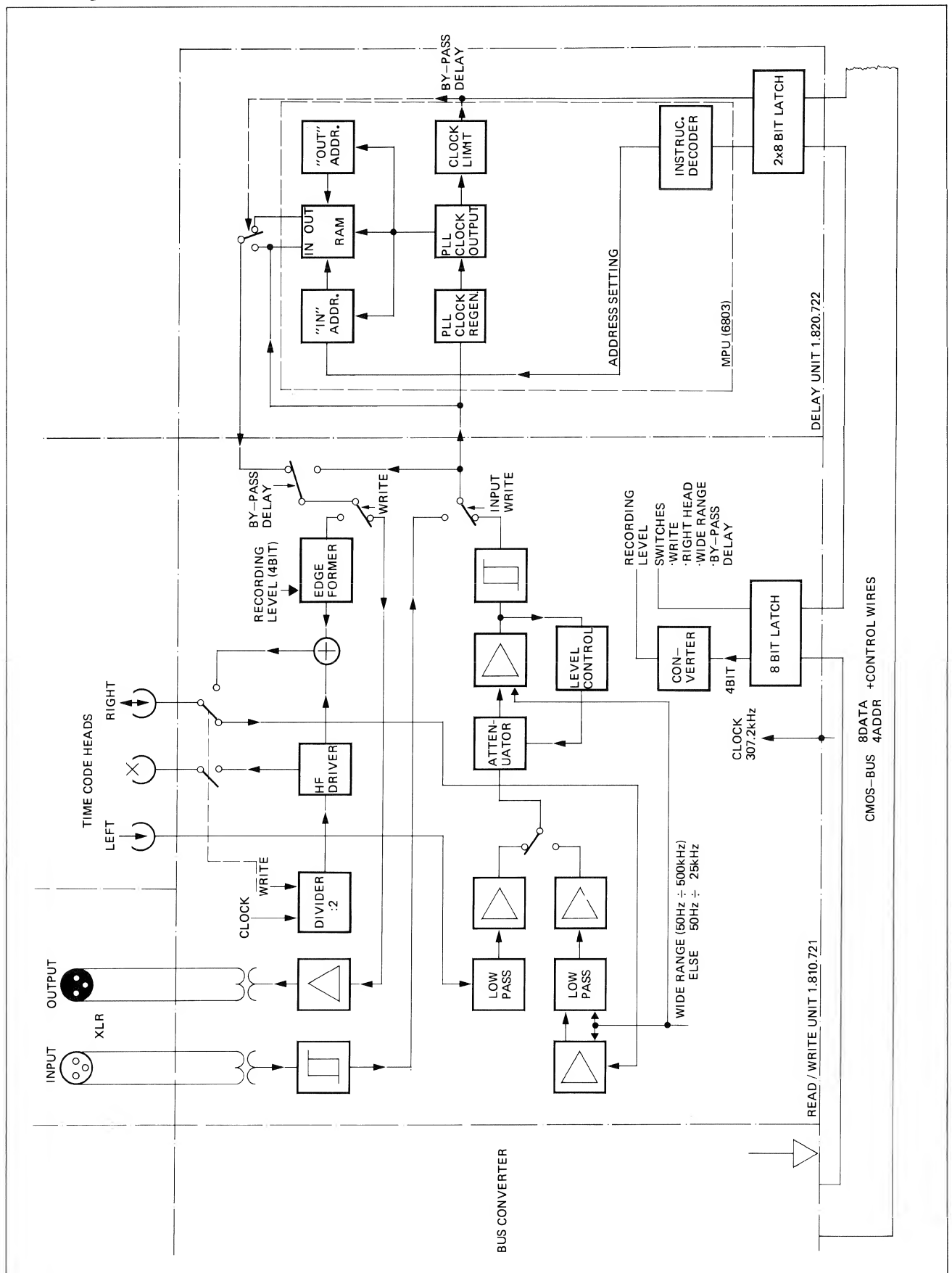
MANUFACTURER: Fc=Fairchild, ITT=Intermetall, Mot=Motorola,
NSC=National Semiconductor Corp., Ph=Philips,
Ses=Sescom, TI=Texas Instruments

ORIG 83/04/22

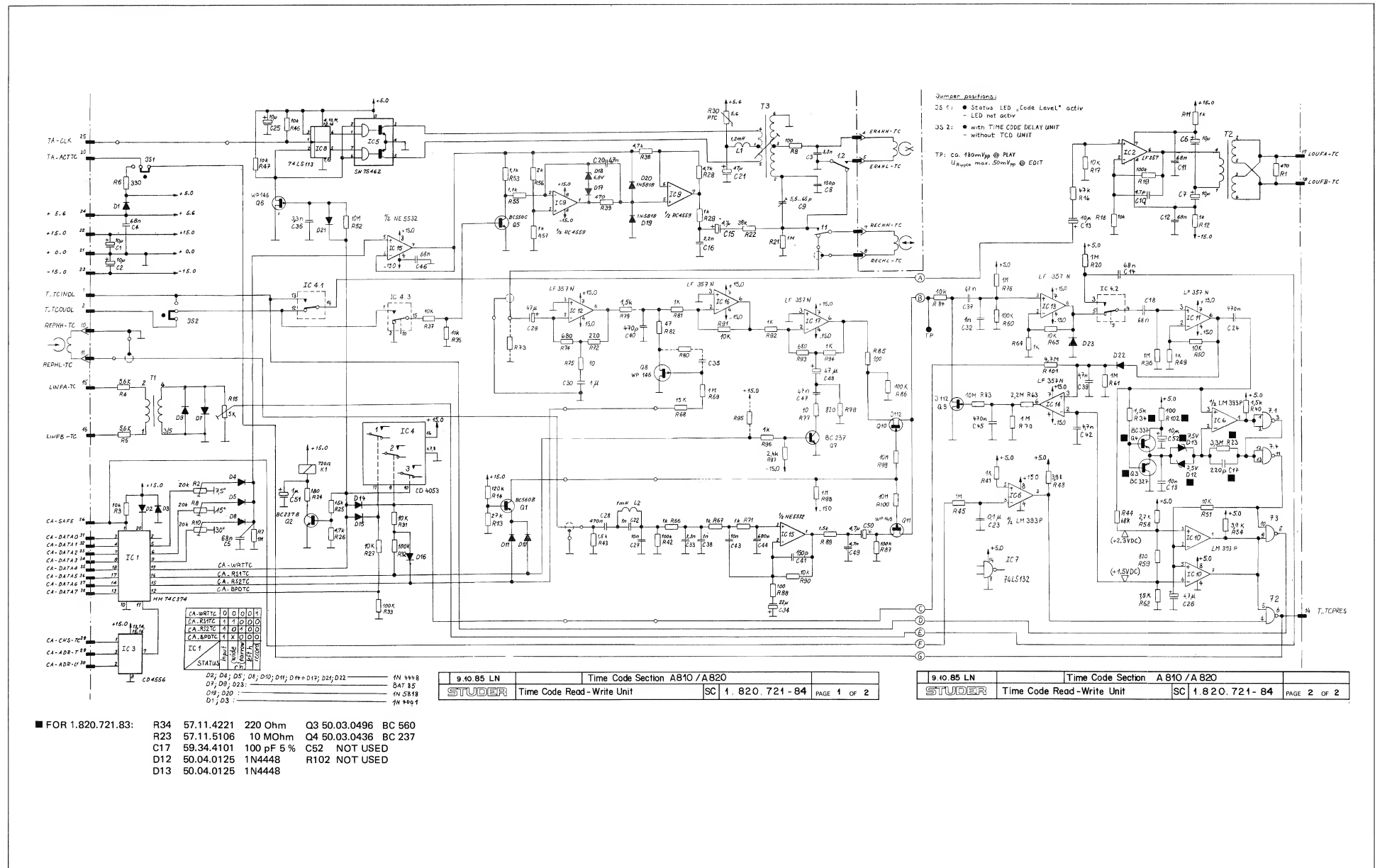
S T U D E R (00) 83/04/22 PB NRS CONTROL BOARD

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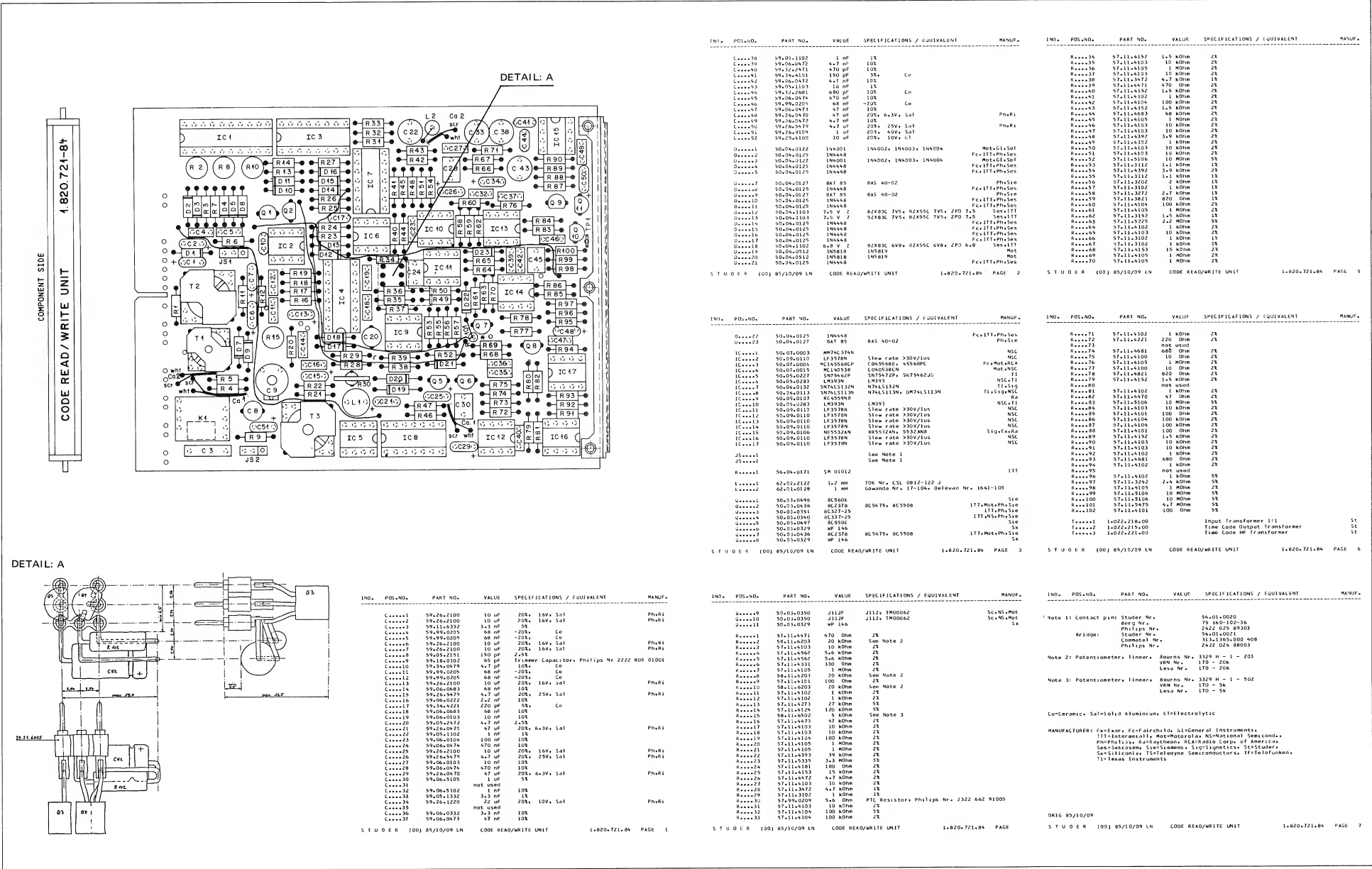
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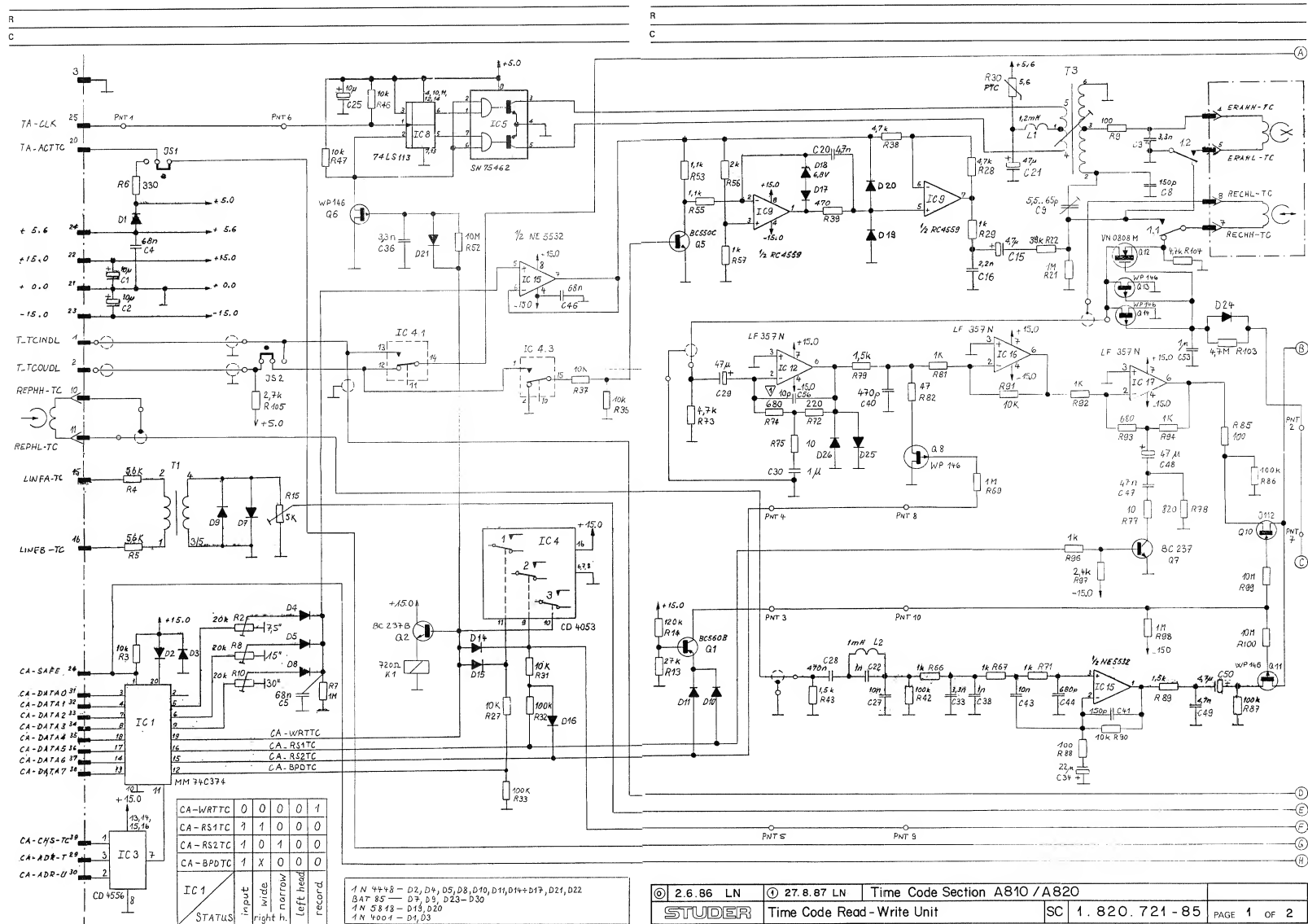
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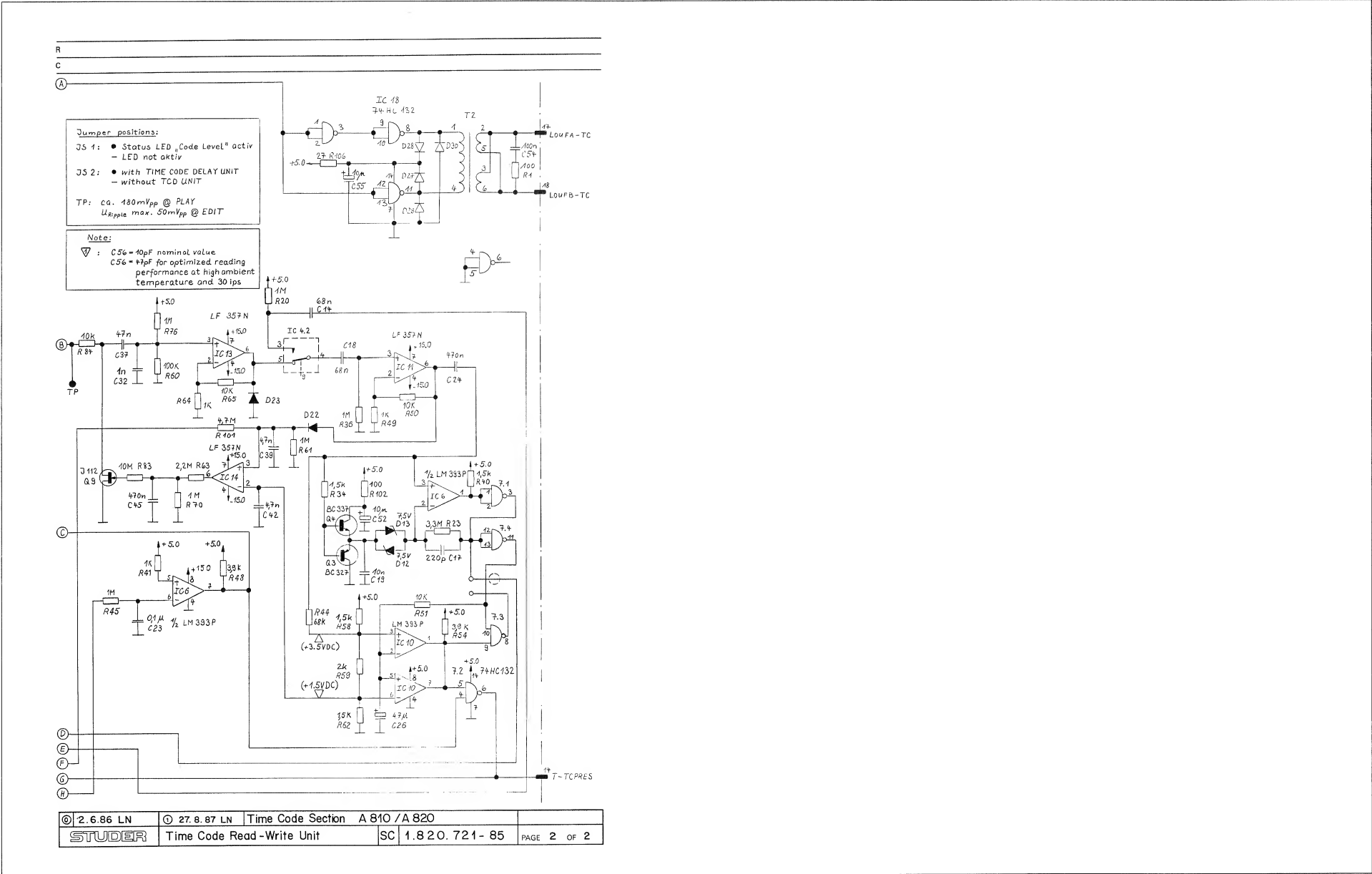
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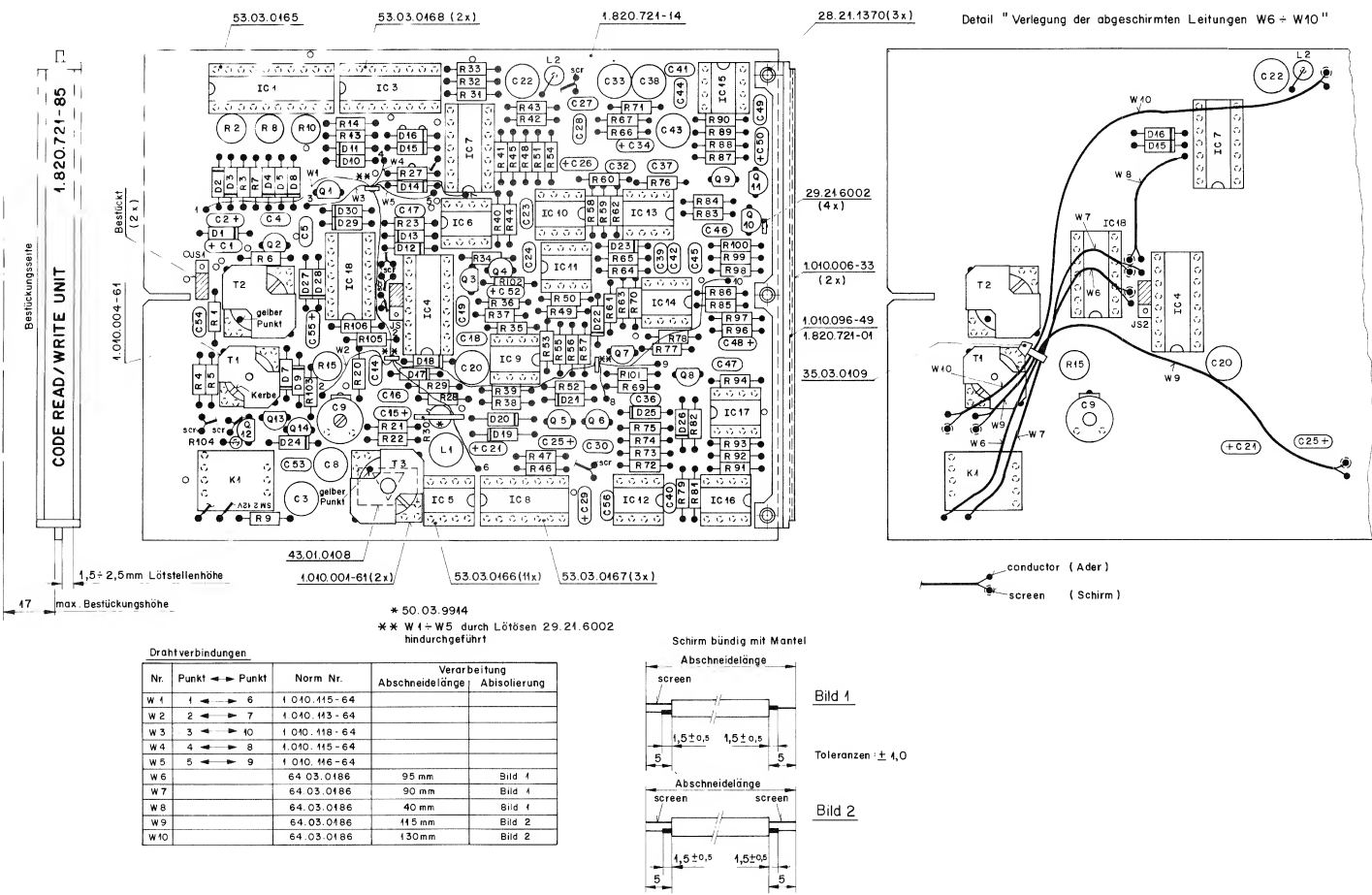
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Time Code Read - Write Unit 1.820.721-85



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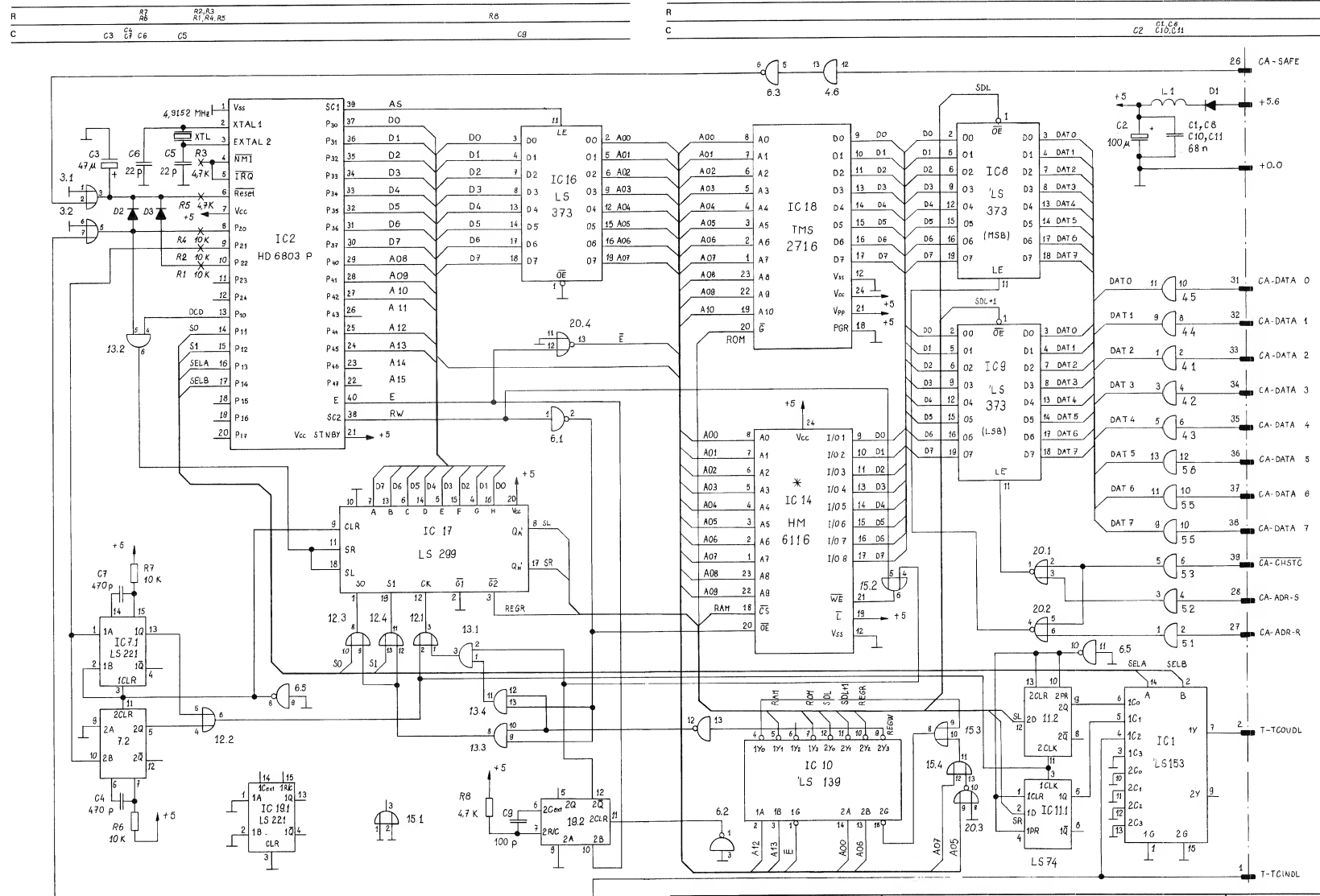


STUDER A812

Time Code Read - Write Unit 1.820.721-85

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C....1	59.26.2100	10 uF	205, 10V, Sal	Ph,Ri	L....1	82.02.2122	1.2 mH	TOK Nr. CSL 0812-122 J	R....94	57.11.4102	1 kOhm	2X	R....94	57.11.4102	1 kOhm	2X	
C....2	59.26.2100	10 uF	205, 10V, Sal	Ph,Ri	L....2	82.01.0120	1 mH	Dowden Nr. 17-104, Delavan Nr. 1841-105	R....95	57.11.4102	not used		R....95	57.11.4102	not used		
C....3	59.06.1932	3.3 nF	2.5X		C....1	50.03.0498	BC590E		R....96	57.11.4102	2.4 kOhm	5X	R....96	57.11.4102	2.4 kOhm	5X	
C....4	59.06.0889	80 pF	10X		Q....2	50.03.0498	BC297B	BC547B, BC550B	R....98	57.11.4105	10 kOhm	2X	R....98	57.11.4105	10 kOhm	2X	
C....5	59.06.0889	80 pF	10X		Q....3	50.03.0351	BC297-25		R....99	57.11.5108	10 kOhm	5X	R....99	57.11.5108	10 kOhm	5X	
C....6	59.06.0889	80 pF	10X		Q....4	50.03.0340	BC297-25		R....100	57.11.5108	10 kOhm	5X	R....100	57.11.5108	10 kOhm	5X	
C....7	59.05.2151	150 pF	2.5X		Q....5	50.03.0497	BC590E		R....101	57.11.5108	4.7 kOhm	5X	R....101	57.11.5108	4.7 kOhm	5X	
C....8	59.05.2151	150 pF	2.5X		Q....6	50.03.0329	NP 148		R....102	57.11.4101	100 Ohm	5X	R....102	57.11.4101	100 Ohm	5X	
C....9	59.18.0102	85 pF	Trimmer Capacitor, Philips Nr. 2222 B0B 01001		Q....7	50.03.0498	BC297B	C547B, BC550B	R....103	57.11.5108	4.7 kOhm	5X	R....103	57.11.5108	4.7 kOhm	5X	
C....10	59.05.2151	150 pF	2.5X		Q....8	50.03.0329	NP 148		R....104	57.11.4101	100 Ohm	5X	R....104	57.11.4101	100 Ohm	5X	
C....11	59.05.2151	150 pF	2.5X		Q....9	50.03.0329	NP 148		R....105	57.11.4101	100 Ohm	5X	R....105	57.11.4101	100 Ohm	5X	
C....12	59.05.2151	150 pF	2.5X		Q....10	50.03.0329	NP 148		R....106	57.11.4101	100 Ohm	5X	R....106	57.11.4101	100 Ohm	5X	
C....13	59.06.0889	80 pF	10X		Q....11	50.03.0329	NP 148		R....107	57.11.4101	100 Ohm	5X	R....107	57.11.4101	100 Ohm	5X	
C....14	59.06.0889	80 pF	10X		Q....12	50.03.1505	VN 600BH	ZVN 010BA	R....108	57.11.4101	100 Ohm	5X	R....108	57.11.4101	100 Ohm	5X	
C....15	59.26.5479	4.7 uF	10X	Ph,Ri	Q....13	50.03.1505	VN 600BH	ZVN 010BA	R....109	57.11.4101	100 Ohm	5X	R....109	57.11.4101	100 Ohm	5X	
C....16	59.26.5479	4.7 uF	10X	Ph,Ri	Q....14	50.03.0329	NP 148		R....110	57.11.4101	100 Ohm	5X	R....110	57.11.4101	100 Ohm	5X	
C....17	59.34.4221	820 pF	10X	Ce	R....1	57.11.4101	100 Ohm	5X	R....111	57.11.4101	100 Ohm	5X	R....111	57.11.4101	100 Ohm	5X	
C....18	59.06.0889	80 pF	10X		R....2	57.11.4101	100 Ohm	5X	R....112	57.11.4101	100 Ohm	5X	R....112	57.11.4101	100 Ohm	5X	
C....19	59.06.0889	80 pF	10X		R....3	57.11.4101	100 Ohm	5X	R....113	57.11.4101	100 Ohm	5X	R....113	57.11.4101	100 Ohm	5X	
C....20	59.06.0889	80 pF	10X		R....4	57.11.4101	100 Ohm	5X	R....114	57.11.4101	100 Ohm	5X	R....114	57.11.4101	100 Ohm	5X	
C....21	59.06.0889	80 pF	10X		R....5	57.11.4101	100 Ohm	5X	R....115	57.11.4101	100 Ohm	5X	R....115	57.11.4101	100 Ohm	5X	
C....22	59.06.0889	80 pF	10X		R....6	57.11.4101	100 Ohm	5X	R....116	57.11.4101	100 Ohm	5X	R....116	57.11.4101	100 Ohm	5X	
C....23	59.06.0889	80 pF	10X		R....7	57.11.4101	100 Ohm	5X	R....117	57.11.4101	100 Ohm	5X	R....117	57.11.4101	100 Ohm	5X	
C....24	59.06.0889	80 pF	10X		R....8	57.11.4101	100 Ohm	5X	R....118	57.11.4101	100 Ohm	5X	R....118	57.11.4101	100 Ohm	5X	
C....25	59.26.2100	10 uF	205, 10V, Sal	Ph,Ri	R....9	57.11.4101	100 Ohm	5X	R....119	57.11.4101	100 Ohm	5X	R....119	57.11.4101	100 Ohm	5X	
C....26	59.26.5479	4.7 uF	10X	Ph,Ri	R....10	57.11.4101	100 Ohm	5X	R....120	57.11.4101	100 Ohm	5X	R....120	57.11.4101	100 Ohm	5X	
C....27	59.06.0889	80 pF	10X		R....11	57.11.4101	100 Ohm	5X	R....121	57.11.4101	100 Ohm	5X	R....121	57.11.4101	100 Ohm	5X	
C....28	59.06.0889	80 pF	10X		R....12	57.11.4101	100 Ohm	5X	R....122	57.11.4101	100 Ohm	5X	R....122	57.11.4101	100 Ohm	5X	
C....29	59.06.0889	80 pF	10X		R....13	57.11.4101	100 Ohm	5X	R....123	57.11.4101	100 Ohm	5X	R....123	57.11.4101	100 Ohm	5X	
C....30	59.06.0889	80 pF	10X		R....14	57.11.4101	100 Ohm	5X	R....124	57.11.4101	100 Ohm	5X	R....124	57.11.4101	100 Ohm	5X	
C....31	59.06.0889	80 pF	10X		R....15	57.11.4101	100 Ohm	5X	R....125	57.11.4101	100 Ohm	5X	R....125	57.11.4101	100 Ohm	5X	
C....32	59.06.0889	80 pF	10X		R....16	57.11.4101	100 Ohm	5X	R....126	57.11.4101	100 Ohm	5X	R....126	57.11.4101	100 Ohm	5X	
C....33	59.06.1392	3.3 nF	1X		R....17	57.11.4101	100 Ohm	5X	R....127	57.11.4101	100 Ohm	5X	R....127	57.11.4101	100 Ohm	5X	
C....34	59.26.1220	22 uF	205, 10V, Sal	Ph,Ri	R....18	57.11.4101	100 Ohm	5X	R....128	57.11.4101	100 Ohm	5X	R....128	57.11.4101	100 Ohm	5X	
C....35	59.06.0889	80 pF	10X		R....19	57.11.4101	100 Ohm	5X	R....129	57.11.4101	100 Ohm	5X	R....129	57.11.4101	100 Ohm	5X	
C....36	59.06.0889	80 pF	10X		R....20	57.11.4101	100 Ohm	5X	R....130	57.11.4101	100 Ohm	5X	R....130	57.11.4101	100 Ohm	5X	
C....37	59.06.0889	80 pF	10X		R....21	57.11.4101	100 Ohm	5X	R....131	57.11.4101	100 Ohm	5X	R....131	57.11.4101	100 Ohm	5X	
C....38	59.05.1102	1 nF	1X		R....22	57.11.4101	100 Ohm	5X	R....132	57.11.4101	100 Ohm	5X	R....132	57.11.4101	100 Ohm	5X	
C....39	59.06.0889	80 pF	10X		R....23	57.11.4101	100 Ohm	5X	R....133	57.11.4101	100 Ohm	5X	R....133	57.11.4101	100 Ohm	5X	
C....40	59.32.2471	470 pF	10X	Ce	R....24	57.11.4101	100 Ohm	5X	R....134	57.11.4101	100 Ohm	5X	R....134	57.11.4101	100 Ohm	5X	
C....41	59.34.4151	500 pF	10X		R....25	57.11.4101	100 Ohm	5X	R....135	57.11.4101	100 Ohm	5X	R....135	57.11.4101	100 Ohm	5X	
C....42	59.06.0889	80 pF	10X		R....26	57.11.4101	100 Ohm	5X	R....136	57.11.4101	100 Ohm	5X	R....136	57.11.4101	100 Ohm	5X	
C....43	59.05.1102	1 nF	1X		R....27	57.11.4101	100 Ohm	5X	R....137	57.11.4101	100 Ohm	5X	R....137	57.11.4101	100 Ohm	5X	
C....44	59.32.2881	880 pF	10X	Ce	R....28	57.11.4101	100 Ohm	5X	R....138	57.11.4101	100 Ohm	5X	R....138	57.11.4101	100 Ohm	5X	
C....45	59.06.0889	80 pF	10X		R....29	57.11.4101	100 Ohm	5X	R....139	57.11.4101	100 Ohm	5X	R....139	57.11.4101	100 Ohm	5X	
C....46	59.06.0889	80 pF	10X		R....30	57.11.4101	100 Ohm	5X	R....140	57.11.4101	100 Ohm	5X	R....140	57.11.4101	100 Ohm	5X	
C....47	59.06.0889	80 pF	10X		R....31	57.11.4101	100 Ohm	5X	R....141	57.11.4101	100 Ohm	5X	R....141	57.11.4101	100 Ohm	5X	
C....48	59.26.5479	4.7 uF	10X	Ph,Ri	R....32	57.11.4101	100 Ohm	5X	R....142	57.11.4101	100 Ohm	5X	R....142	57.11.4101	100 Ohm	5X	
C....49	59.06.0889	80 pF	10X		R....33	57.11.4101	100 Ohm	5X	R....143	57.11.4101	100 Ohm	5X	R....143	57.11.4101	100 Ohm	5X	
C....50	59.26.5479	4.7 uF	10X	Ph,Ri	R....34	57.11.4101	100 Ohm	5X	R....144	57.11.4101	100 Ohm	5X	R....144	57.11.4101	100 Ohm	5X	
C....51	59.06.0889	80 pF	10X		R....35	57.11.4101	100 Ohm	5X	R....145	57.11.4101	100 Ohm	5X	R....145	57.11.4101	100 Ohm	5X	
C....52	59.26.1100	10 uF	205, 10V, Sal	Ph,Ri	R....36	57.11.4101	100 Ohm	5X	R....146	57.11.4101	100 Ohm	5X	R....146	57.11.4101	100 Ohm	5X	
C....53	59.06.0889	80 pF	10X		R....37	57.11.4101	100 Ohm	5X	R....147	57.11.4101	100 Ohm	5X	R....147	57.11.4101	100 Ohm	5X	
C....54	59.06.0889	80 pF	10X		R....38	57.11.4101	100 Ohm	5X	R....148	57.11.4101	100 Ohm	5X	R....148	57.11.4101	100 Ohm	5X	
C....55	59.06.0889	80 pF	10X		R....39	57.11.4101	100 Ohm	5X	R....149	57.11.4101	100 Ohm	5X	R....149	57.11.4101	100 Ohm	5X	
C....56	59.34.1100	10 pF	5X	Ce	R....40	57.11.4101	100 Ohm	5X	R....150	57.11.4101	100 Ohm	5X	R....150	57.11.4101	100 Ohm	5X	
D....1	50.04.0122	1N4001	1N4002, 1N4003, 1N4004	Met,Di,Sei	R....41	57.11.4101	100 Ohm	5X	R....151	57.11.4101	100 Ohm	5X	R....151	57.11.4101	100 Ohm	5X	
D....2	50.04.0122	1N4001	1N4002, 1N4003, 1N4004	Met,Di,Sei	R....42	57.11.4101	100 Ohm	5X	R....152	57.11.4101	100 Ohm	5X	R....152	57.11.4101	100 Ohm	5X	
D....3	50.04.0122	1N4001	1N4002, 1N4003, 1N4004	Met,Di,Sei	R....43	57.11.4101	100 Ohm	5X	R....153	57.11.4101	100 Ohm	5X	R....153	57.11.4101	100 Ohm	5X	
D....4	50.04.0122	1N4001	1N4002, 1N4003, 1N4004	Met,Di,Sei	R....44	57.11.4101	100 Ohm	5X	R....154	57.11.4101	100 Ohm	5X	R....154	57.11.4101	100 Ohm	5X	
D....5	50.04.0122	1N4001	1N4002, 1N4003, 1N4004	Met,Di,Sei	R....45	57.11.4101	100 Ohm	5X	R....155	57.11.4101	100 Ohm	5X	R....155	57.11.4101	100 Ohm	5X	
D....6	50.04.0127	not used			R....46	57.11.4101	100 Ohm	5X	R....156	57.11.4101	100 Ohm	5X	R....156	57.11.4101	100 Ohm	5X	
D....7	50.04.0127	8AT 85	BAS 40-02	Ph,Sei	R....47	57.11.4101	100 Ohm	5X	R....157	57.11.4101	100 Ohm	5X	R....157	57.11.4101	100 Ohm	5X	
D....8	50.04.0127	8AT 85	BAS 40-02	Ph,Sei	R....48	57.11.4101	100 Ohm	5X	R....158	57.11.4101	100 Ohm	5X	R....158	57.11.4101	100 Ohm	5X	
D....9	50.04.0127	8AT 85	BAS 40-02	Ph,Sei	R....49	57.11.4101	100 Ohm	5X	R....159	57.11.4101	100 Ohm	5X	R....159	57.11.4101	100 Ohm	5X	
D....10	50.04.0127	8AT 85	BAS 40-02	Ph,Sei	R....50	57.11.4101	100 Ohm	5X	R....160	57.11.4101	100 Ohm	5X	R....160	57.11.4101	100 Ohm	5X	
D....11	50.04.0127	8AT 85	BAS 40-02	Ph,Sei	R....51	57.11.4101	100 Ohm	5X	R....161	57.11.4101	100 Ohm	5X	R....161	57.11.4101	100 Ohm	5X	
D....12	50.04.0127	8AT 85	BAS 40-02	Ph,Sei	R....52	57.11.4101	100 Ohm	5X	R....162	57.11.4101	100 Ohm	5X	R....162	57.11.4101	100 Ohm	5X	
D....13	50.04.0127	8AT 85	BAS 40-02	Ph,Sei	R....53	57.11.4101	100 Ohm	5X	R....163	57.							

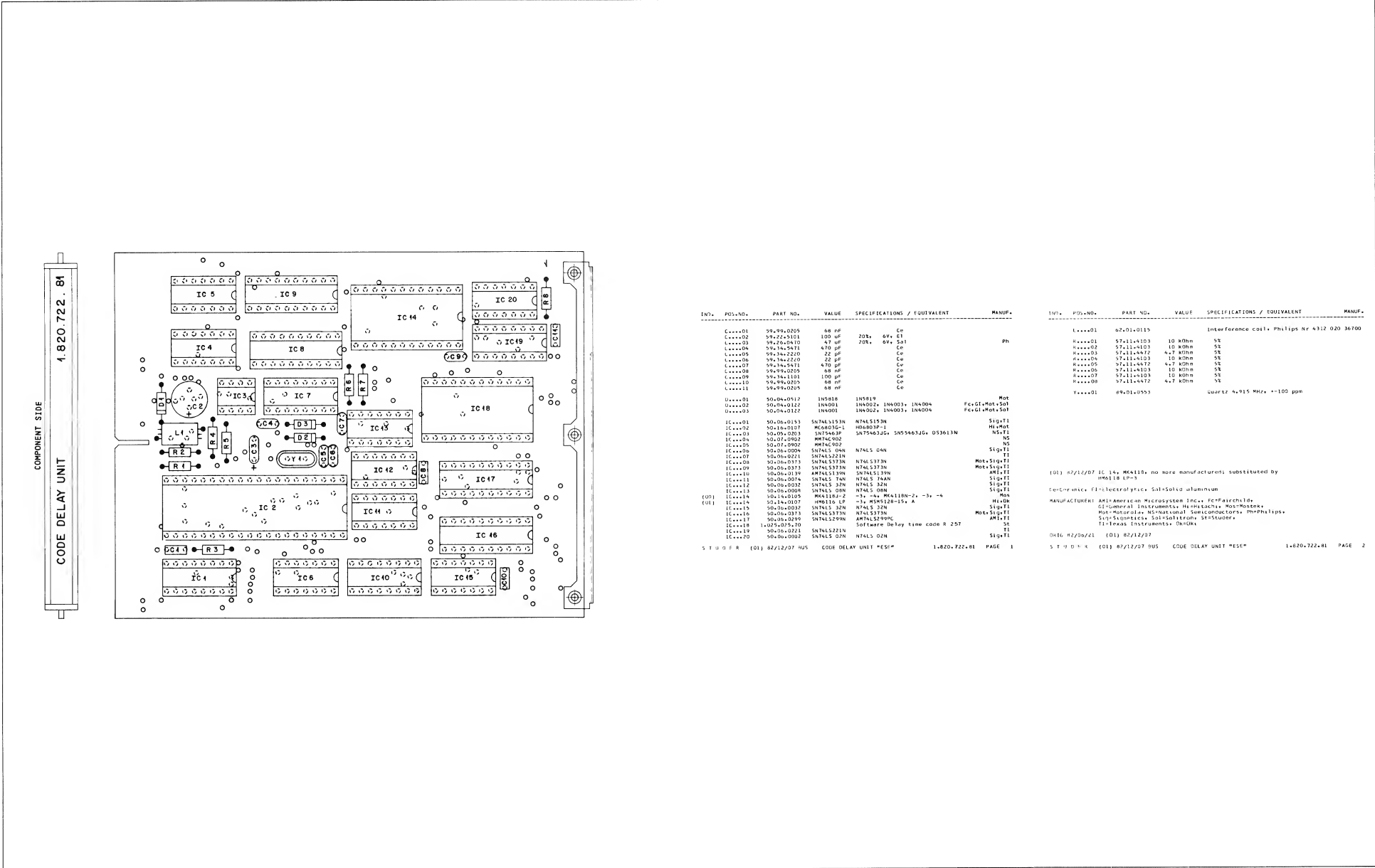
Code Delay Unit 1.820.722.81



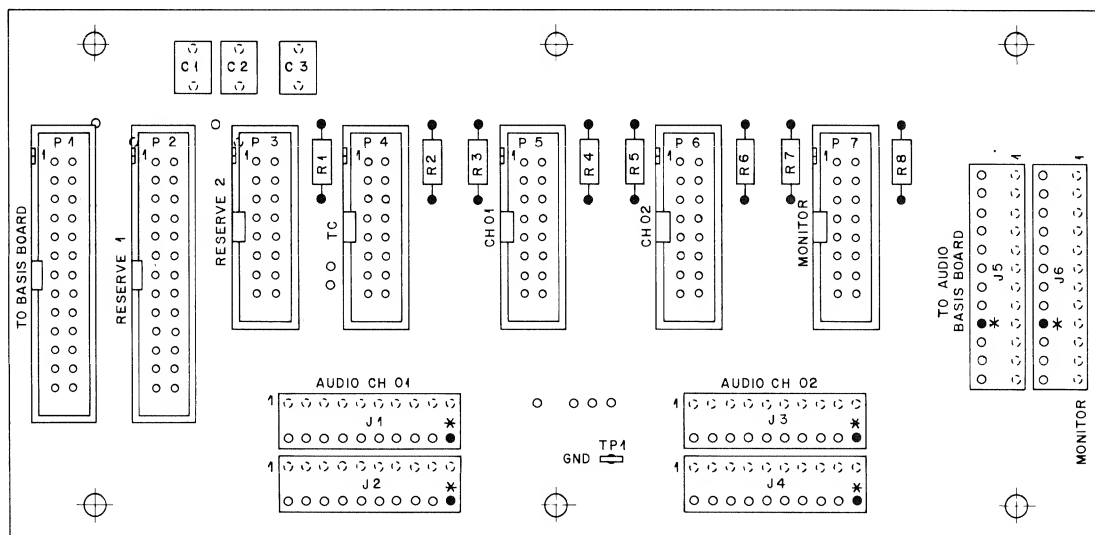
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7 12 82	Sandigliano	A 820/A810 Time code section	
STUDER	Code Delay Unit	SC 4. 820. 722. 81	PAGE 1 of 1

Code Delay Unit 1.820.722.81



Distribution Board 1.820.794.00



IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.06.0474	470 nF	20%, 5x3V	
C.....2		59.06.0474	470 nF	20%, 25V	
C.....3		59.06.0474	470 nF	20%, 25V	
R.....1		57.11.4100	10 Ohm	10%	
R.....2		57.11.4100	10 Ohm	10%	
R.....3		57.11.4100	10 Ohm	10%	
R.....4		57.11.4100	10 Ohm	10%	
R.....5		57.11.4100	10 Ohm	10%	
R.....6		57.11.4100	10 Ohm	10%	
R.....7		57.11.4100	10 Ohm	10%	
R.....8		57.11.4100	10 Ohm	10%	
J.....1		54.01.0290	10 cont.	CIS, AMP Nr. 163.680-9	
J.....2		54.01.0290	10 cont.	CIS, AMP Nr. 163.680-9	
J.....3		54.01.0290	10 cont.	CIS, AMP Nr. 163.680-9	
J.....4		54.01.0290	10 cont.	CIS, AMP Nr. 163.680-9	
J.....5		54.01.0215	12 cont.	CIS, AMP Nr. 1-163.680-1	
J.....6		54.01.0215	12 cont.	CIS, AMP Nr. 1-163.680-1	
P.....1		54.14.2003	26 cont.	See note 1	
P.....2		54.14.2003	26 cont.	See note 1	
P.....3		54.14.2002	16 cont.	See note 2	
P.....4		54.14.2002	16 cont.	See note 2	
P.....5		54.14.2002	16 cont.	See note 2	
P.....6		54.14.2002	16 cont.	See note 2	
P.....7		54.14.2002	16 cont.	See note 2	
TP.....1		29.21.6002		Testpoint	

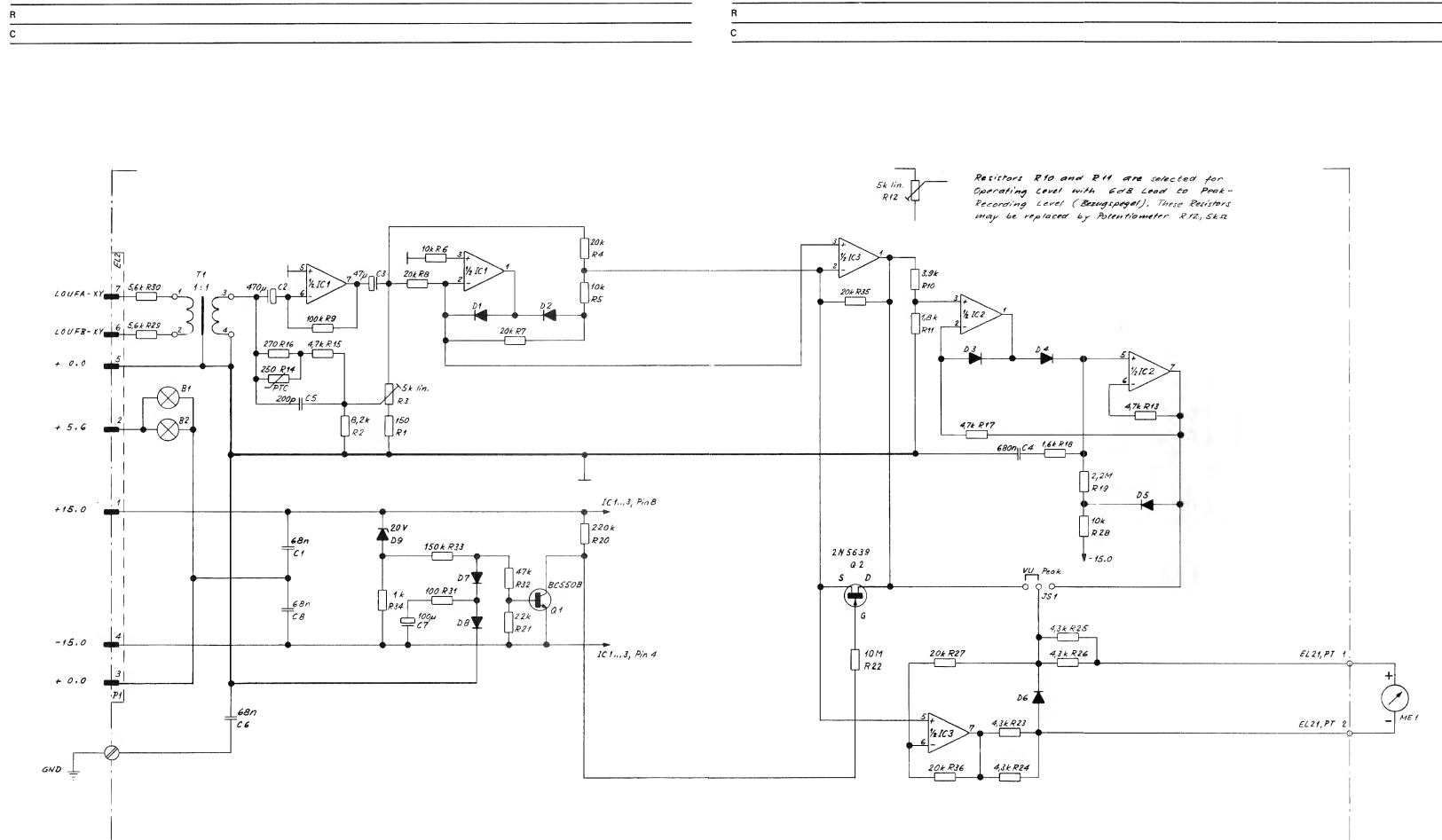
Note 1 - Yamaichi Nr. FAP-26-08//4; Burndy Nr. BPH 9 B 26 B00 G5

Note 2 - Yamaichi Nr. FAP-16-08//4; Burndy Nr. BPH 9 B 16 B00 G5

ORIG 84/11/14

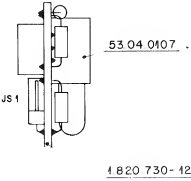
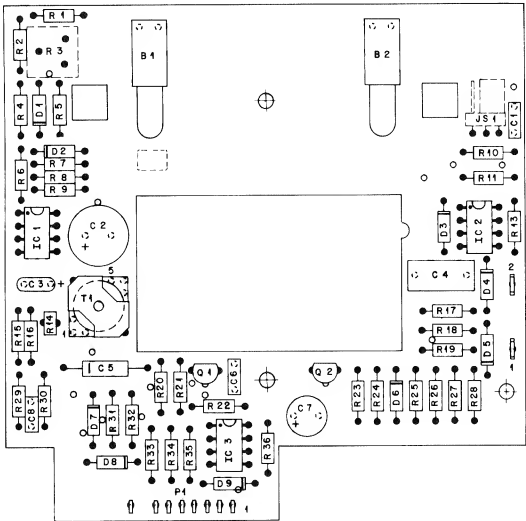
S T U D E R (00) 84/11/14 WE DISTRIBUTION BOARD 1.820.794.00 PAGE 1

VU-Meter Amplifier 1.820.730-81



24.1.83	Buchegger	A820 / A840 Audio Section	Part of GRP 70
STUDER	VU-Meter Amplifier	SC 1.820.730-81	PAGE 1 OF 1

VU-Meter Amplifier 1.820.730-81

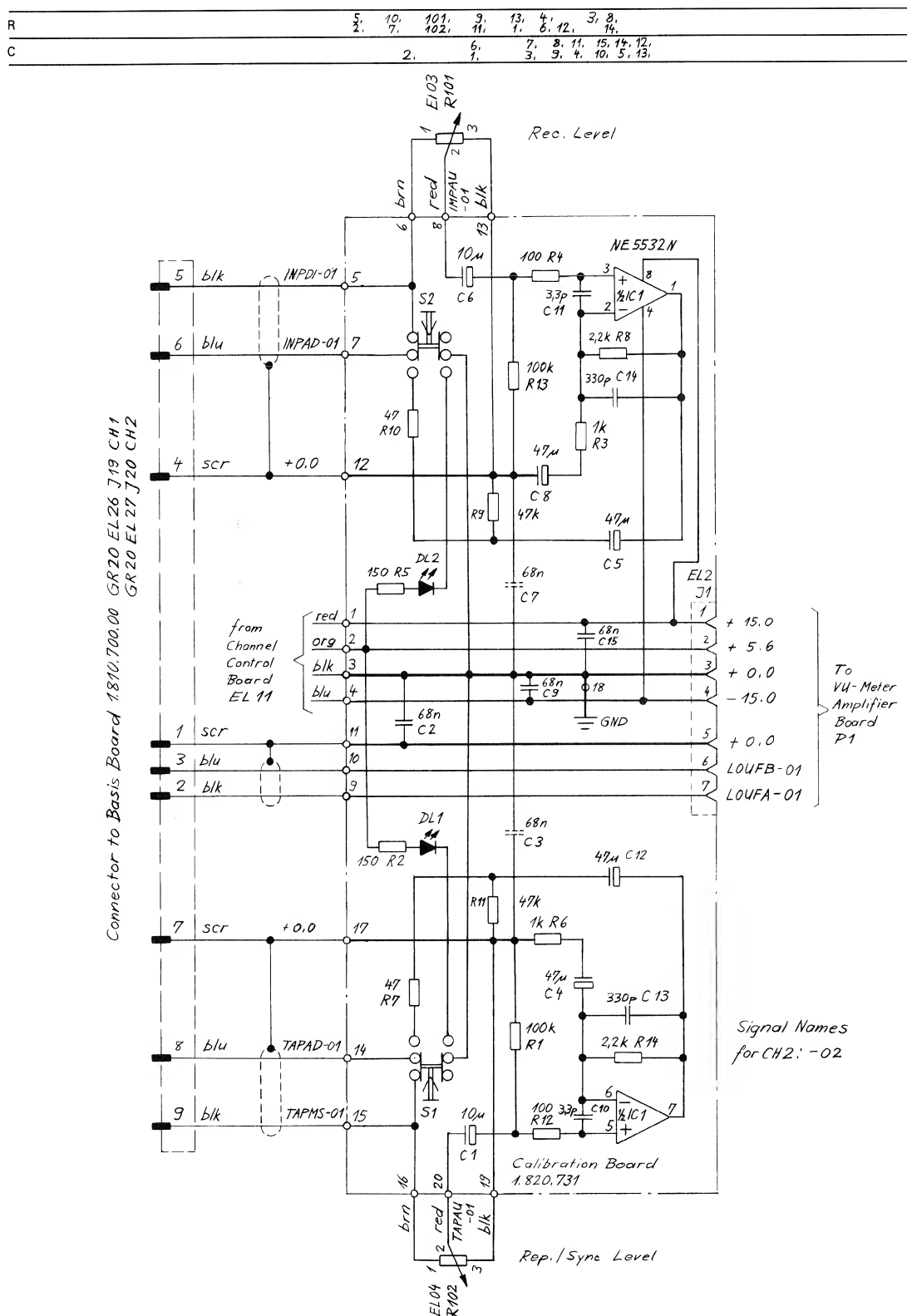


IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
B.....1	51-02-3144	Lamp	See note 1		
B.....2	51-02-0144	Lamp	See note 1		
C.....1	59-99-0205	68 nF		Ce	
C.....2	59-22-2041	470 uF		6Vx E1	
C.....3	59-22-0470	87 uF		6Vx Sx1	PI
C.....4	59-01-0044	680 uF		15x 63Vx MPC	
C.....5	59-14-7201	200 pF		15x 63Vx P5	
C.....6	59-99-0205	68 nF		Ce	
C.....7	59-22-9101	100 uF		25Vx E1	
C.....8	59-29-0205	68 nF		Ce	
D.....1	50-04-0125	1N4448			ITT-PPh-Sem-T1
D.....2	50-04-0125	1N4448			ITT-PPh-Sem-T1
D.....3	50-04-0125	1N4448			ITT-PPh-Sem-T1
D.....4	50-04-0125	1N4448			ITT-PPh-Sem-T1
D.....5	50-04-0125	1N4448			ITT-PPh-Sem-T1
D.....6	50-04-0125	1N4448			ITT-PPh-Sem-T1
D.....7	50-04-0125	1N4448			ITT-PPh-Sem-T1
D.....8	50-04-0125	1N4448			ITT-PPh-Sem-T1
D.....9	50-04-1109	20 V 2	2P02G, 82783C2G, BEK55C20		ITT-Sem
IC.....1	50-09-0101	LF353N	TL072ACP		NS-T1
IC.....2	50-09-0101	LF353N	TL072ACP		NS-T1
IC.....3	50-09-0101	LF353N	TL072ACP		NS-T1
JS.....1			See note 2		
ME.....1	1-810-320-22		VU-Meter		SL
P.....1	54-01-0110	9 cont.	AMP Nr. 163-749-7		
Q.....1	50-01-0036	8C237B			ITT-PPh-Sem
Q.....2	50-03-0331	2N5639	BC547B		Mot-SK
R.....1	57-11-4151	150 Ohm			
R.....2	57-11-4622	8-2 kOhm			

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....3	58-01-4902	5 kOhm	See note 3		
R.....4	57-11-3203	20 kOhm		15	
R.....5	57-11-4103	10 kOhm			
R.....6	57-11-4103	10 kOhm			
R.....7	57-11-3203	20 kOhm			
R.....8	57-11-3203	20 kOhm			
R.....9	57-11-4109	100 kOhm			
R.....10	57-11-4392	3-5 kOhm			
R.....11	57-11-4182	1-8 kOhm			
R.....12		not used			
R.....13	57-11-4472	4-7 kOhm			
R.....14	57-09-0216	250 Ohm		PTC Resistors: Philips Nr. 2322 660 91001	
R.....15	57-11-4472	4-7 kOhm			
R.....16	57-11-4711	270 Ohm			
R.....17	57-11-4472	4-7 kOhm			
R.....18	57-11-3182	1-6 kOhm		15	
R.....19	57-11-5225	2-2 MOhm			
R.....20	57-11-4224	220 kOhm			
R.....21	57-11-4223	22 kOhm			
R.....22	57-11-4106	10 MOhm			
R.....23	57-11-3432	4-3 kOhm		15	
R.....24	57-11-3432	4-3 kOhm		15	
R.....25	57-11-3432	4-3 kOhm		15	
R.....26	57-11-3432	4-3 kOhm		15	
R.....27	57-11-3203	20 kOhm		15	
R.....28	57-11-4103	10 kOhm			
R.....29	57-11-4562	5-6 kOhm			
R.....30	57-11-4562	5-6 kOhm			
R.....31	57-11-4101	100 Ohm			
R.....32	57-11-4473	4-7 kOhm			
R.....33	57-11-4194	150 kOhm			
R.....34	57-11-4102	1 kOhm			
R.....35	57-11-3203	20 kOhm		15	
R.....36	57-11-3203	20 kOhm		15	
T.....01	1-822-218-00		Inputtransformer 1 : 1		SL

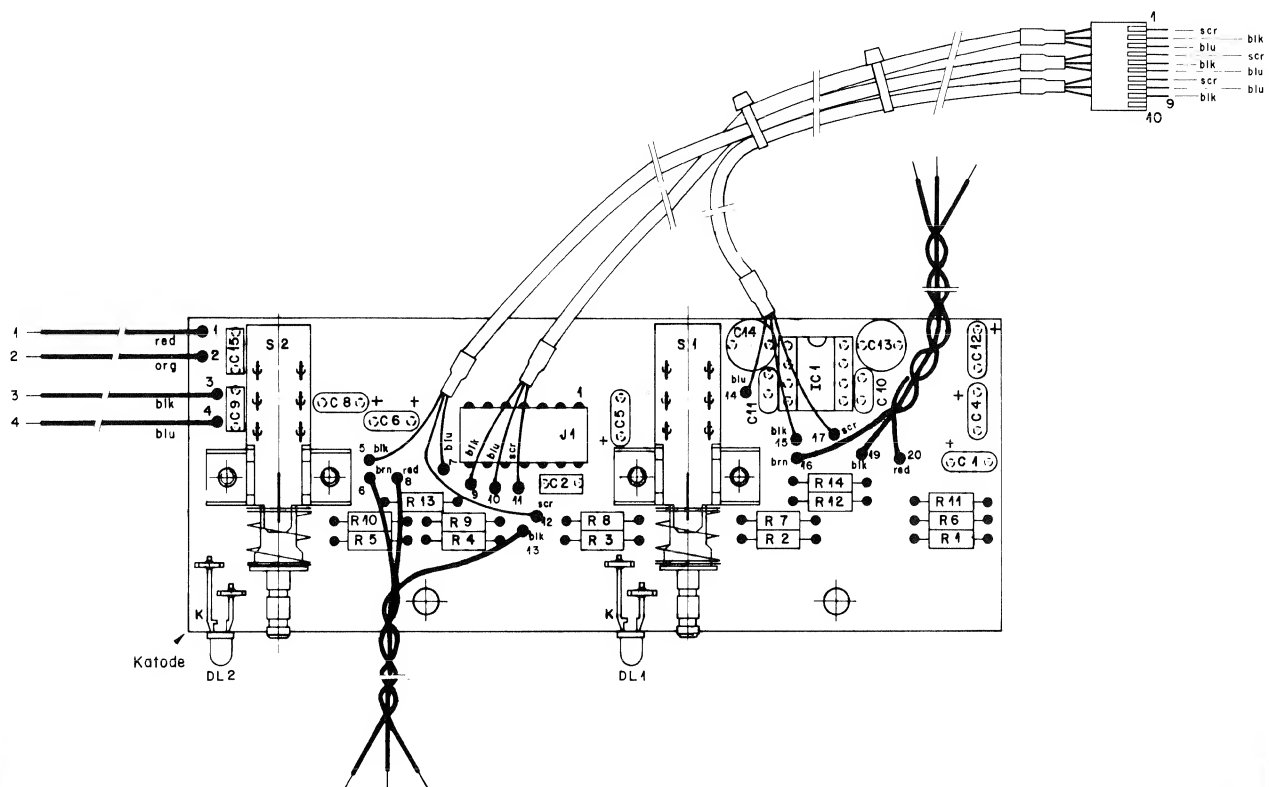
IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1 - Lamp 6 V-D-03A					
Dism Nr.					
ITT Nr.					
Socket: Studer Nr. 53-04-0107, Alps Nr. 4050 021					
Note 2 - Component: PTH: Studer 54-01-0125, AMP: 7518-301-36					
Bridge: Studer 54-01-0021, Philips 2422 024 88003					
Note 3 - 5 kOhm potentiometer					
Allen Bradley: Nr. 6 45 502					
Bourne: Nr. 3186 T-1-502					
Spectrol: Nr. 63M 502 T010					
Cap: Ceramic, El: electrolytic, MPC: Polyester, PS: Polystyrol					
Sul: Solid aluminum					
MANUFACTURER: ITT-Intermetals, NS-National, Philips, Siemens, Studer					
Phil: Philips, Sem: Semiconductors, Sier: Siemens, SL: Studer					
SK: Siliconix, TI: Texas Instruments					

Calibration Board 1.820.731.00



06.08.82	ed. gimpert	A 820 / A 810 Audio Section	Part of GRP 70
STUDER	Calibration Board	SC 1.820.731.00	PAGE 1 OF 1

Calibration Board 1.820.731.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	001	59.26.2100	10 uF	16V, Sal	Ph	R...	101	58.10.9006	10 kOhm	log., Allen Bradley Nr. JA 1 N 072 S 103 AA	AA
C...	002	59.99.0205	68 nF	Ce		R...	102	58.10.9006	10 kOhm	log., Allen Bradley Nr. JA 1 N 072 S 103 AA	AA
C...	003		not used			S...	001	1.820.731.01		2pole change over switch	St
C...	004	59.26.0470	47 uF	6V, Sal	Ph	S...	002	1.820.731.01		2pole change over switch	St
C...	005	59.26.0470	47 uF	6V, Sal	Ph						
C...	006	59.26.2100	10 uF	16V, Sal	Ph						
C...	007		not used								
C...	008	59.26.0470	47 uF	6V, Sal	Ph						
C...	009	59.99.0205	68 nF	Ce							
C...	010	59.34.0339	3.3 pF	Ce							
C...	011	59.34.0339	3.3 pF	Ce							
C...	012	59.26.0470	47 uF	6V, Sal	Ph						
C...	013	59.05.2331	330 pF	PP							
C...	014	59.05.2331	330 pF	PP							
C...	015	59.99.0205	68 nF	Ce							
DL...	001	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie						
DL...	002	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie						
IC...	001	50.09.0105	NE5532N	XR5532N, 5532NB	Sig, Ex, Ra						
J...	001	54.01.0244	7 cont.	AMP Nr. 163.683-5							
R...	001	57.11.4104	100 kOhm								
R...	002	57.11.4151	150 Ohm								
R...	003	57.11.4102	1 kOhm								
R...	004	57.11.4101	100 Ohm								
R...	005	57.11.4151	150 Ohm								
R...	006	57.11.4102	1 kOhm								
R...	007	57.11.4470	47 Ohm								
R...	008	57.11.4222	2.2 kOhm								
R...	009	57.11.4473	47 kOhm								
R...	010	57.11.4470	47 Ohm								
R...	011	57.11.4473	47 kOhm								
R...	012	57.11.4101	100 Ohm								
R...	013	57.11.4104	100 kOhm								
R...	014	57.11.4222	2.2 kOhm								

Ce=Ceramic, PP=Polypropylen, Sal=Solid aluminium

MANUFACTURER: Ex=Exar, Ph=Philips, Ra=Raytheon, Sie=Siemens, Sig=Signetics, St=Studer

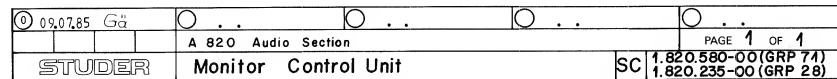
ORIG 82/08/06

S T U D E R (00) 82/08/06 GAE CALIBRATION BOARD

1.820.731.00 PAGE 1

S T U O E R (00) 82/08/06 GAE CALIBRATION BOARD

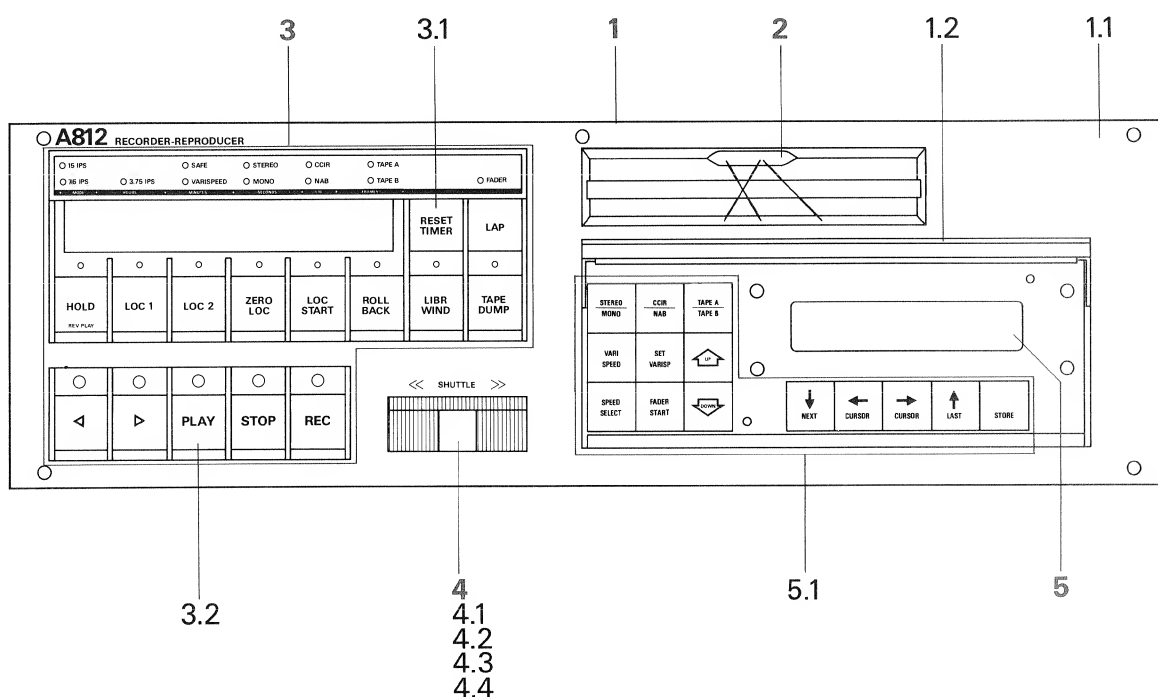
1.820.731.00 PAGE 2



8. SPARE PARTS

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8.3 Reel Adaptors	8/4
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8.5 Pinch roller assembly	8/8
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8.13 Economy Studio, console with overbridge	8/22
8.14 Studio console and overbridge.....	8/24
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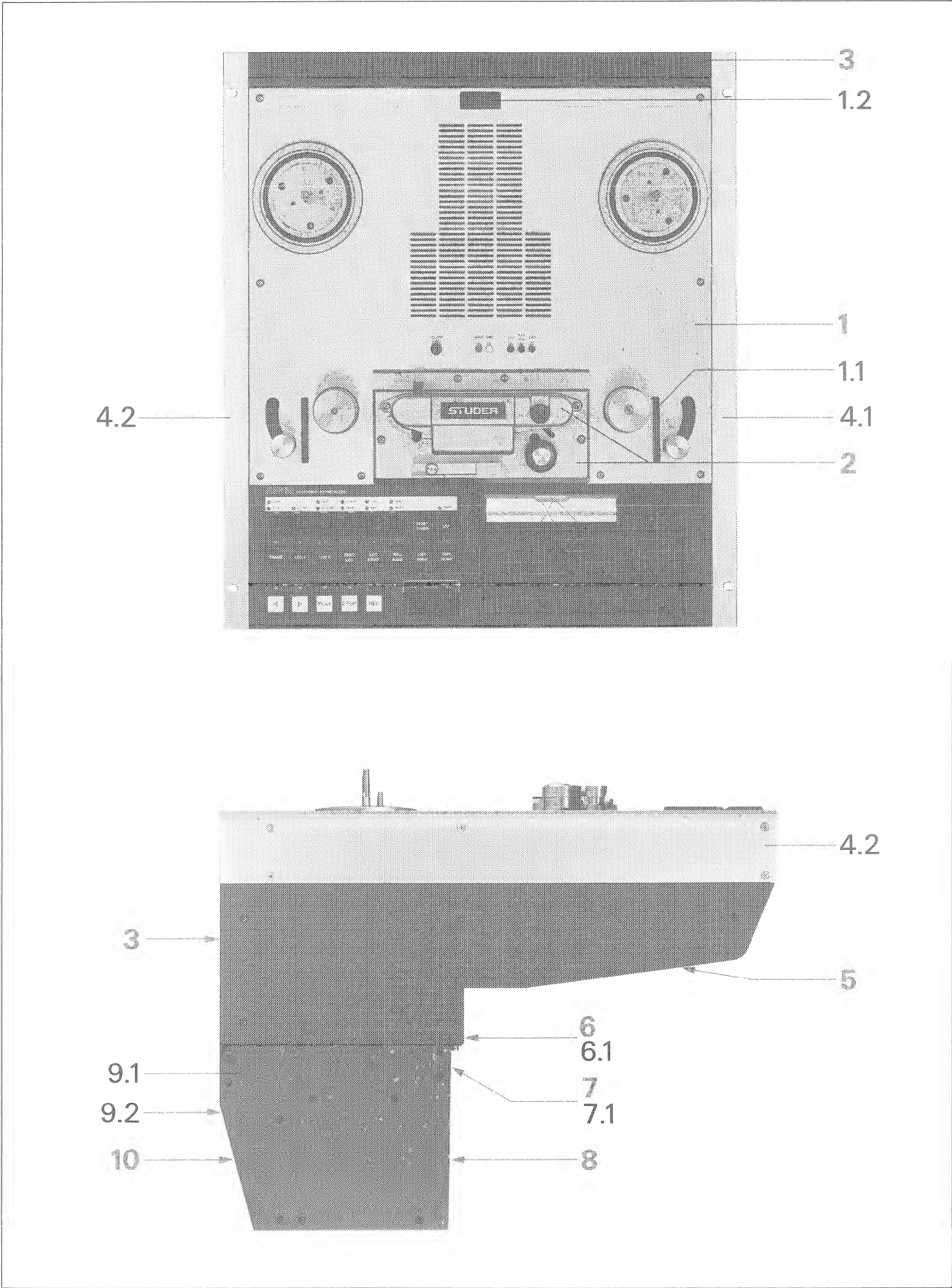
8.1 TAPE DECK PANEL



Pos	Qty	Order No.	Part Name
1	1	1.811.230.00	Control compl.
1.1	1	1.811.230.01	Front cover plate
1.2	1	1.811.230.02	Snap action door
2	1	1.820.110.18	Edit (splice-)Block
3	1	1.811.777.00	Push button/Display Board
3.1		1.820.232.81	Push buttonhousing compl. with buttons
3.2	1	1.810.302.81	Housing for 5-push button
4	1	1.328.215.81	Shuttle unit
4.1	1	1.328.218.00	Shuttle bar
4.2	1	1.328.214.00	Shuttle board
4.3	1	1.328.215.22	Shuttle wheel with bearing
4.4	1	58.99.0139	Potentiometer 5 k-Ohm 2W
5	1	1.811.233.82	LC-Display-Unit
5.1	1	1.811.230.04	Cover plate LCD-unit

Labels and push buttons: see section 8.15

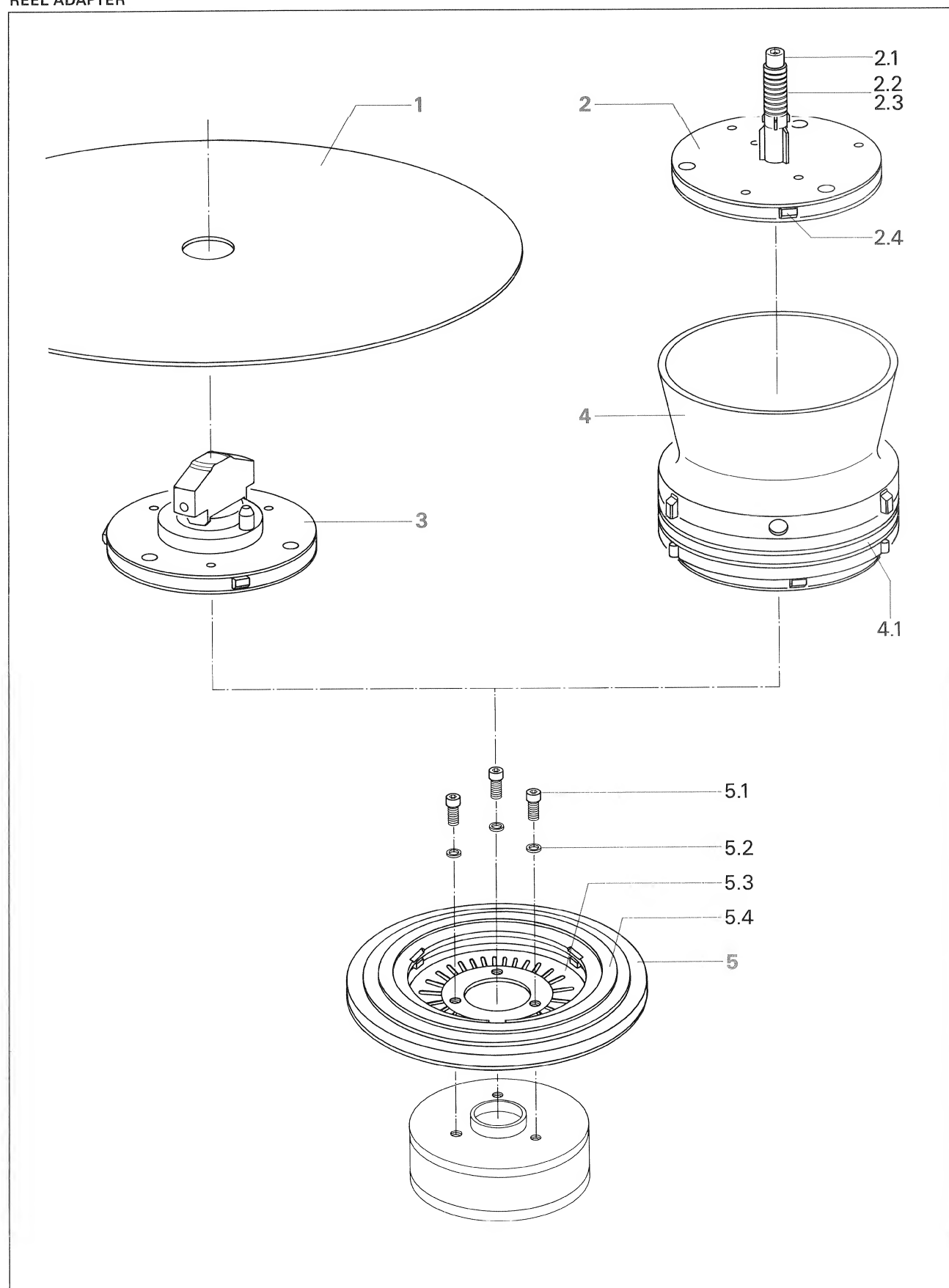
8.2
COVERS



COVERS

Pos	Qty	Order No.	Part Name
1	1	1.811.090.22	Upper tape transport cover without monitor
or		1.811.090.21	Tape transport cover with monitor
	8	21.51.8455	Oval head allen screw M 4 x 8
1.1		1.811.090.20	Tape hold rail
1.2	1	55.12.0001	Mainsswitch
2	1	1.810.186.00	Head block cover compl.
3	1	1.811.490.02	Rear cover
	4	1.010.043.21	Counter sunk screw black M 4 x 6
4.1	1	1.811.090.07	Rack mount rail right
4.2	1	1.811.090.06	Rack mount rail left
		21.51.2455	Counter sunk screw Ni M 4 x 8
		21.51.2456	Counter sunk screw Ni M 4 x 10
5	1	1.811.090.23	Bottom tape transport cover
		1.010.034.21	Oval head screw black M 4 x 8
6	1	1.811.510.05	Power supply cover
	5	1.010.043.21	Counter sunk screw black M 4 x 6
	2	1.010.034.21	Oval head screw black M 4 x 8
6.1	1	1.811.510.15	Fan cover
7		1.811.500.05	Front cover braket
or		1.811.500.20	Front cover braket for channel remote interface
	4	1.010.043.21	Counter sunk screw black M 4 x 6
	2	1.010.041.21	Cheesehead screw spez. M 4 x 8,5
	2	24.16.2240	Serrated washer M 4
	2	24.16.3032	Retaining washer 3,2
	1	31.03.0110	Plastic cover, round
or		54.24.0102	Headphone socket
	1	1.010.013.31	Plastic cover, rectangular
or		73.01.0116	Mechanical elapsed timer counter
	1	1.820.861.00	Time counter control PCB
7.1	1	1.820.507.00	Latch fro electronic unit
	2	1.010.034.21	Counter sunk screw black M 4 x 8
8	1	1.811.500.07	Hinged cover
9.1	1	1.811.500.03	Sidepanel left (amplifier bay)
9.2	1	1.811.500.04	Sidepanel right (amplifier bay)
		1.010.043.21	Counter sunk screw M 4 x 6
10		1.811.500.06	Bottom cover (connector field)
		1.010.043.21	Counter sunk screw M 4 x 6

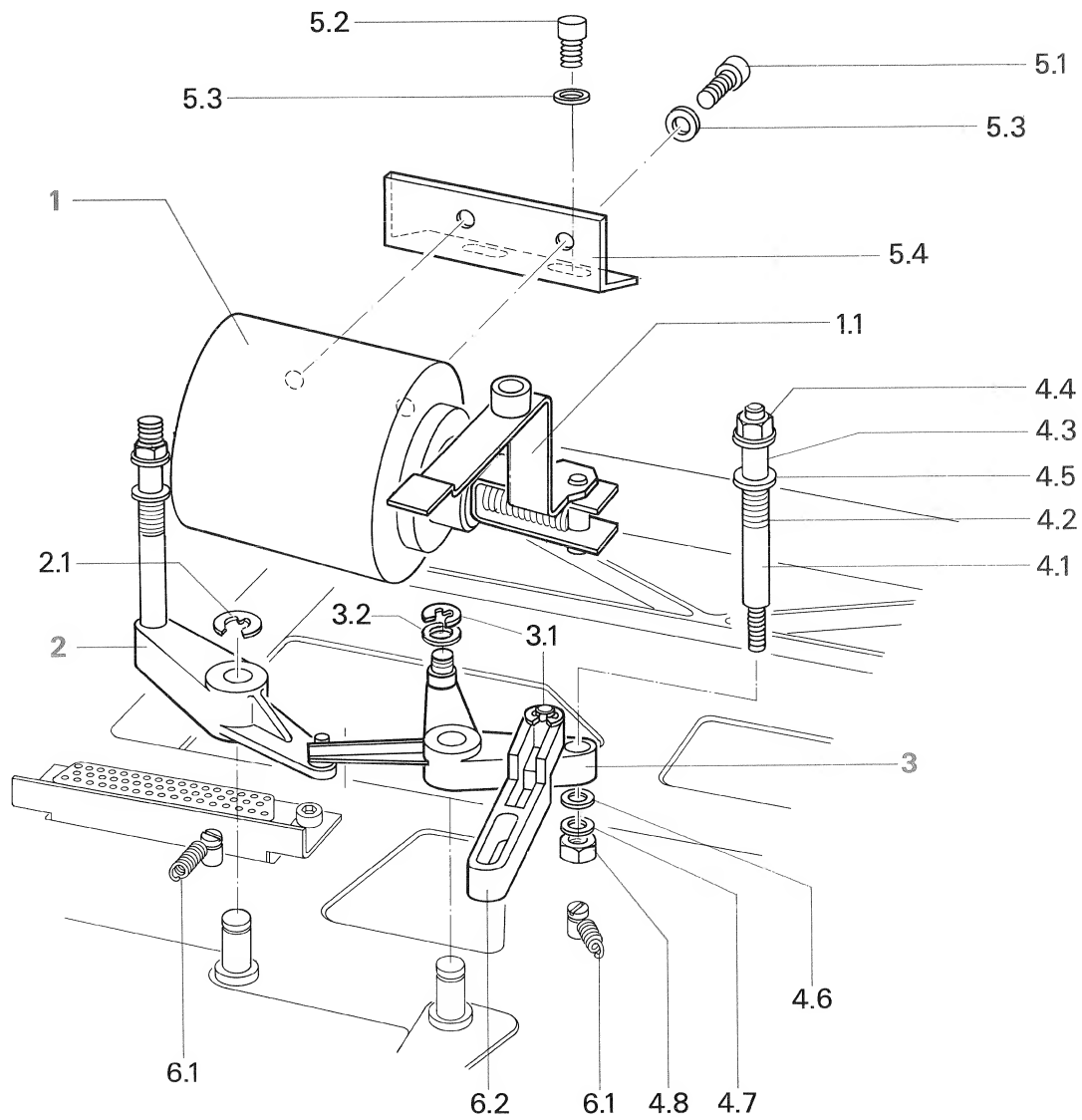
8.3 REEL ADAPTER



REEL ADAPTER

Pos	Qty	Order No.	Part Name
1	2	1.013.328.00	Spooling plate Diameter 300 mm/12"
2	2	1.013.326.00	Ciné adaptor
2.1	2	1.013.326.06	Special shaft screw
2.2	2	1.062.390.01	Guiding sleeve
2.3	2	1.736.794.03	Pressure spring
2.4	3	1.013.326.03	Latch
2.5	3	1.011.010.05	Pressure spring
3	2	1.013.343.00	DIN-Adaptor
4	2	1.013.344.00	NAB-Adaptor Professional
4.1	1	31.99.0123	Rubber-O-Ring
5	1	1.013.325.00	Adaptor lower part
5.1	3	1.010.039.21	Centering screw M 4x10
5.2	3	24.16.1040	Lock washer to M 4
5.3	1	37.02.0216	Springwasher D 40,5/61,5
5.4	1	1.013.325.03	Rubber-O-ring

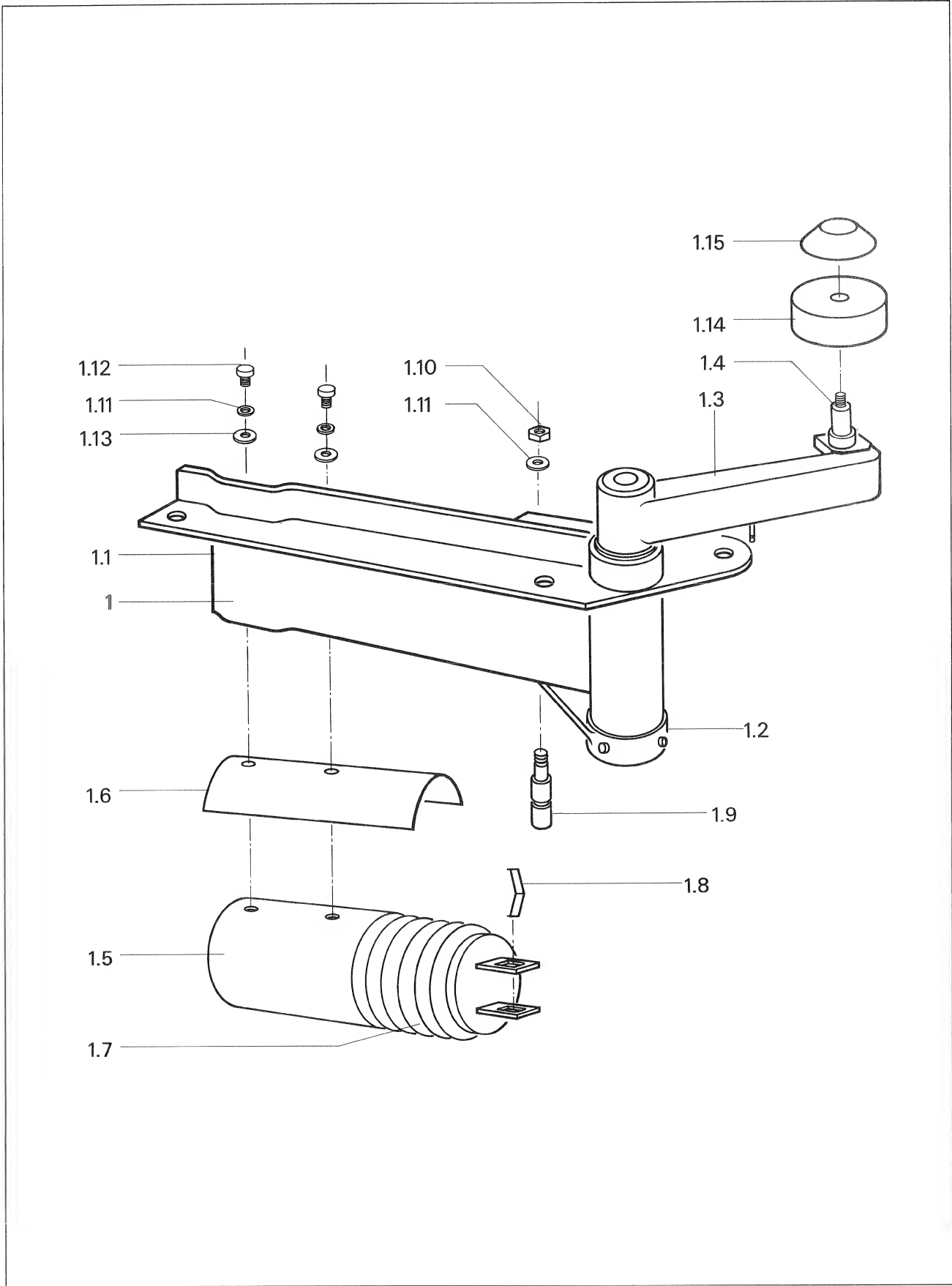
8.4
TAPE LIFTER ASSEMBLY



TAPE LIFTER ASSEMBLY

Pos	Qty	Order No.	Part Name
1	1	1.014.718.00	Lifter solenoid
1.1	1	1.811.132.00	Connection lever complete
2	1	1.811.130.00	Lifter arm left, complete
2.1	2	24.16.3040	Circlip 4,0/9,3
3	1	1.811.131.00	Tape lifter arm right, cplt
3.1	1	24.16.3019	Circlip 1,9
3.2	1	1.810.130.08	Bearing bush
4.1	2	1.810.130.10	Lifter bolt
4.2	2	1.020.820.12	Pressure spring
4.3	2	1.810.130.09	Sleeve
4.4	2	22.99.0112	Hex.Nut M 3, locking type
4.5	4	1.810.130.13	Guide washer
4.6	2	23.01.1032	Washer D 3,2/6 x 0,5
4.7	2	24.16.1030	Lock washer to M 3
4.8	2	22.01.5030	Hex.nut M 3 x 0,5
5.1	2	21.53.0453	Cyl.screw IS M 4 x 5
5.2	2	21.53.0455	Cyl.screw IS M 4 x 8
5.3	4	24.16.1040	Lock washer to M 4
5.4	1	1.811.090.16	Fixing angle
6.1	2	1.010.038.37	Tension spring
6.2	1	1.810.130.12	Plastic shin

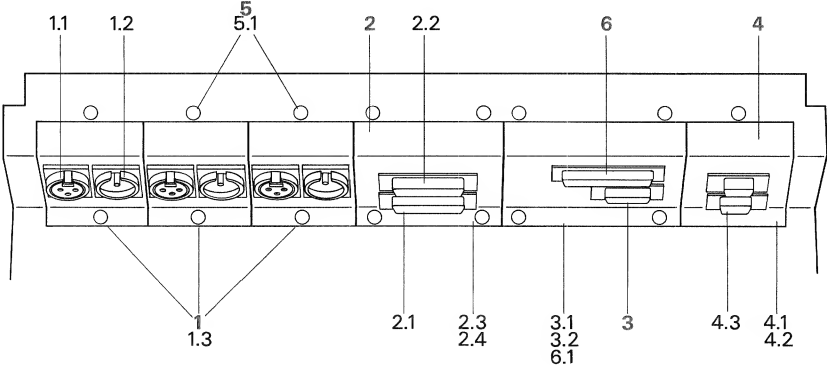
8.5
PINCH ROLLER ASSEMBLY



8.5
PINCH ROLLER ASSEMBLY

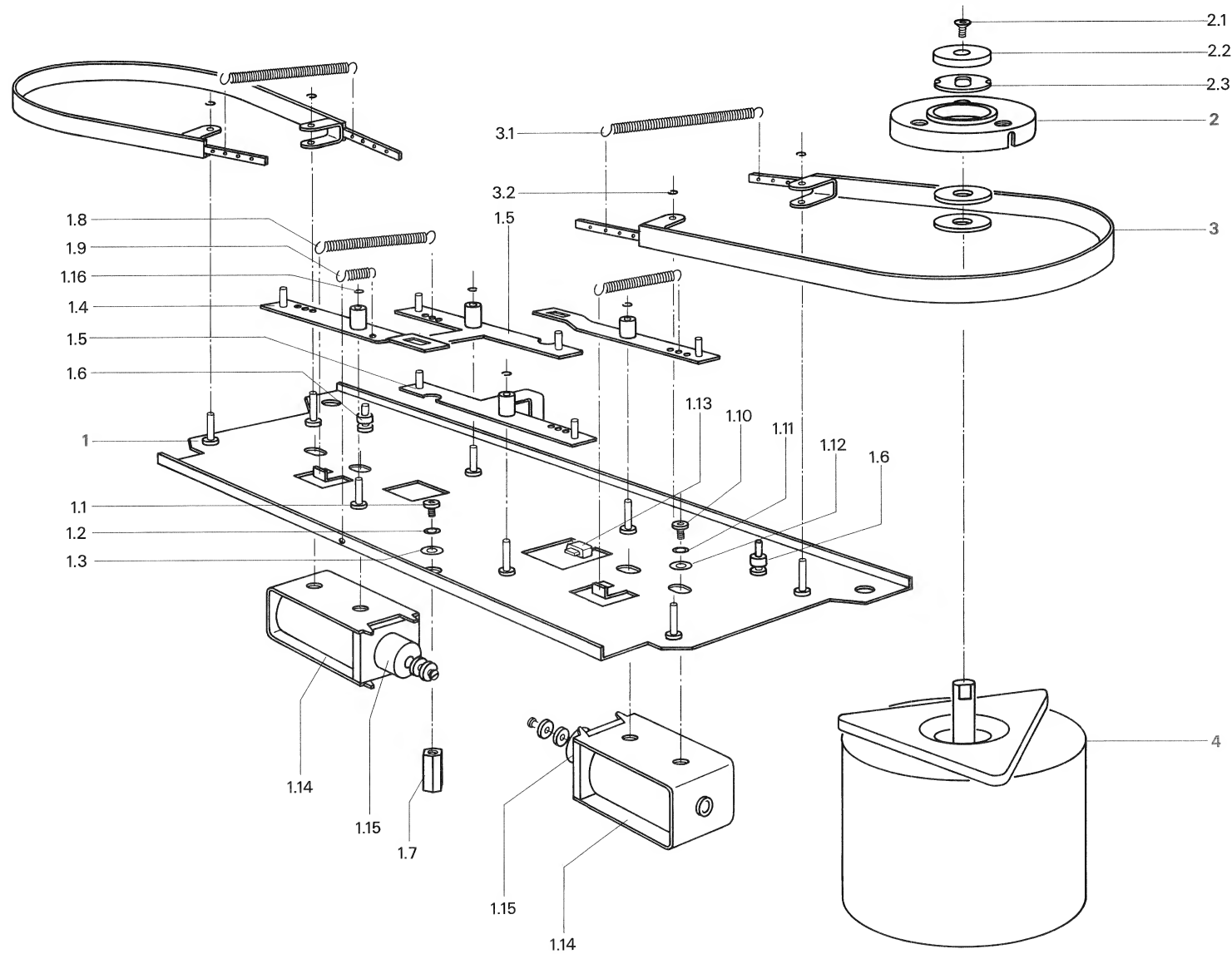
Pos	Qty	Order No.	Part Name
1	1	1.811.140.00	Pressure assembly complete
1.1	1	1.810.100.01	Pressure assembly support
1.2	1	1.067.170.02	Lower lever
1.3	1	1.811.141.00	Pressure lever complete
1.4	1	1.067.170.10	Pressure roller shaft
1.5	1	1.014.718.00	Lifter solenoid
1.6	1	1.810.100.09	Shield
1.7	1	1.810.100.08	Rubber bellows
1.8	1	1.810.100.11	Plate-spring
1.9	1	1.067.170.05	Small shaft to lower lever
1.10	1	22.01.8040	Hexagonal nut M 4 x 0,5d
1.11	3	24.16.1040	Lock-washer D 4,3/7
1.12	2	21.53.0455	Cyl.screw IS M 4 x 8
1.13	2	23.01.2043	Washer D 9,0/4,3 (M 4)
1.14	1	1.811.105.81	Pinch roller only
1.15	1	1.810.106.00	Cover to pinch roller

8.6
TERMINAL BOARD



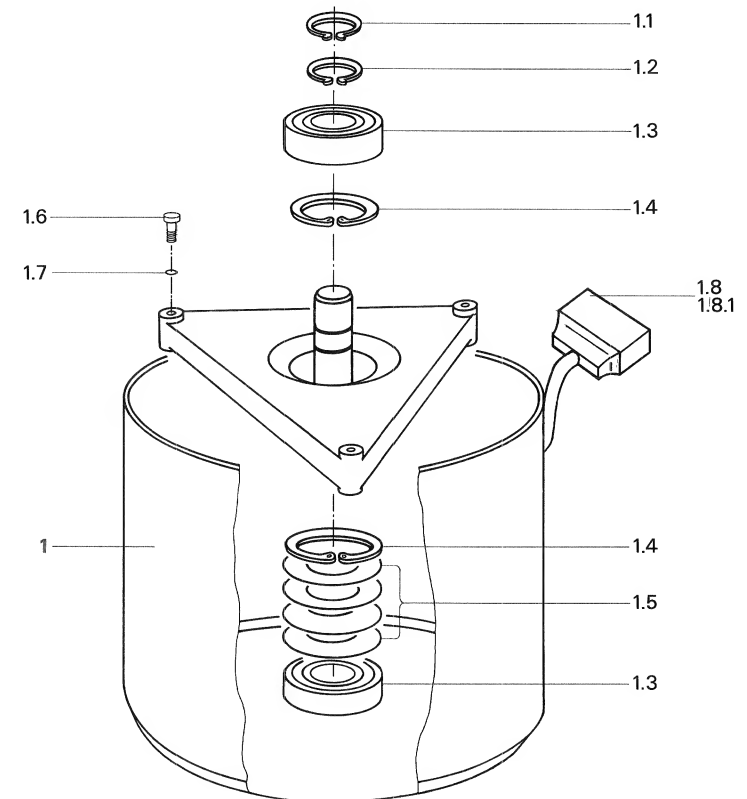
Pos	Qty	Order No.	Part Name
1	1	1.820.502.00	Connection XLR-3 complete
1.1	1	54.21.2002	XLR-3 F Female socket
1.2	1	54.21.2001	XLR-3 M Male plug
1.3	or	1.820.500.23	Blank panel instead of 1.820.502.00
2		1.811.565.00	VU-Panel connector compl.
2.1	1	1.811.894.00	Panel cable harness complete Audio
2.2	1	1.023.152.04	Panel cable harness complete Control
2.3	1	1.811.500.11	Connection plate Panel
2.4	or	1.811.500.10	Blank panel
3	1	20.812.945.00	NRS-Control-Kit (incl. cable harness with Interface PCB)
3.1	1	1.820.504.01	NRS-Ctrl. Connection plate
3.2	or	1.820.500.22	Blank panel
4	1	20.812.885.00	Serial interface RS232 kit compl. with wireharness & IF
	or	20.812.886.00	Serial interface RS422 and SMPTE/EBU Protocol compl. with Wireharness & IF
4.1	1	1.811.500.12	Connector mounting plate
4.2	1	1.820.560.05	Cover plate for RS232 connectors
4.3	1	1.023.190.05	Cable harness RS232 complete
5	16	1.010.007.21	Oval head screw IS M 4 x 8 black
5.1	16	24.16.1040	Lock washer M 4
6	1	20.812.938.00	Channel remote control IF kit (incl. cable harness with IF PCB)
6.1	or	1.811.500.17	Connection plate CH-Control and NRS Control

8.7
BRAKE CHASSIS

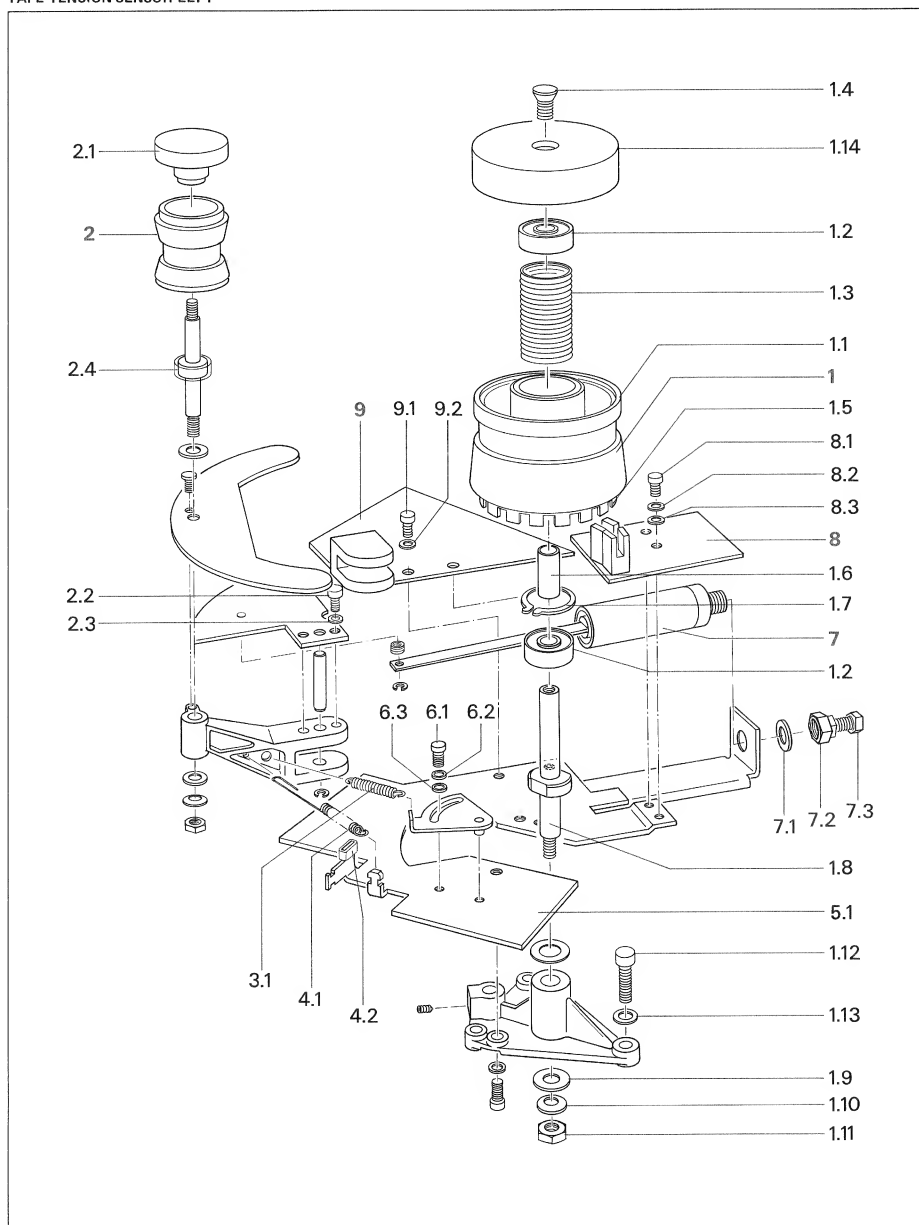


BRAKE CHASSIS

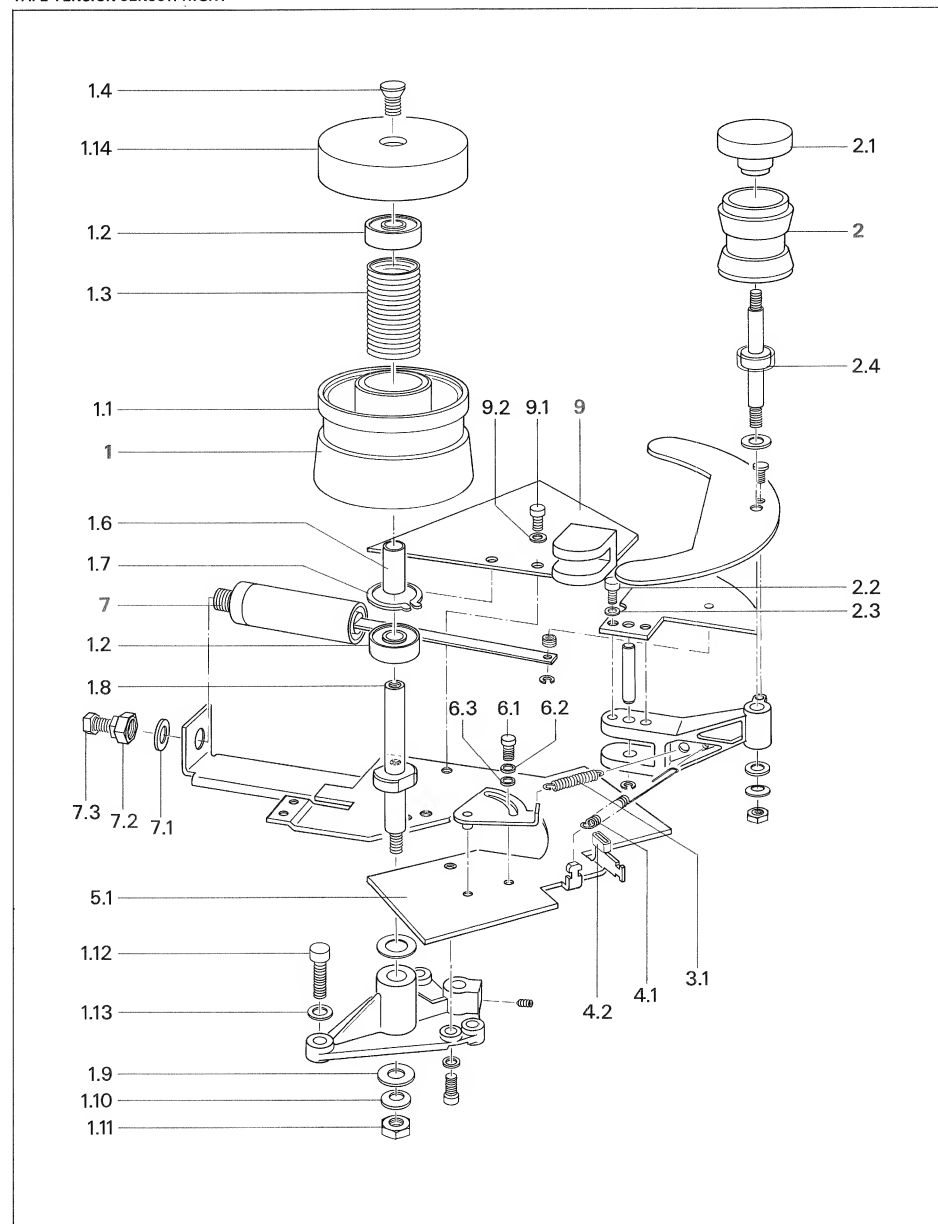
Pos	Qty	Order No.	Part Name
1	1	1.810.165.00	Brake chassis compl. with solenoids etc.
1	1	1.810.166.00	Brake chassis complete
1.1	3	21.53.0355	Cyl.screw IS M 3 x 8
1.2	3	24.161.1030	Lock-washer D 3,2/5,5
1.3	3	23.01.2032	Washer D 3,2/7 x 0,5
1.4	2	1.167.864.00	Brake lever straight
1.5	2	1.167.863.00	Brake lever angled
1.6	2	1.067.170.14	Shock-absorber rubber
1.7	3	1.010.141.27	Hex.fixing bolt M4/M3x9
1.8	2	1.077.100.13	Brake tension spring
1.9	1	1.010.101.37	Tension spring short
1.10	4	21.53.0353	Cyl.screw IS M 3 x 5
1.11	4	24.16.1030	Lock washer D 3,2 x 5,5
1.12	4	23.01.2032	Washer D 3,2/7 x 0,5
1.13	2	1.067.100.36	Shock-absorber rubber
1.14	2	1.014.806.00	Brake solenoid
1.15	2	1.014.808.00	Plunger complete
1.16	4	24.16.3032	Clip
2	2	1.021.274.00	Brake drum complete
2.1	2	21.53.2457	Countersunk screw IS M 4 x 12
2.2	2	1.080.105.08	Pressure ring
2.3	6	1.080.105.07	Locking disc
3	2	1.811.165.00	Brake band complete
3.1	2	1.077.100.13	Brake tension spring
3.2	4	24.16.3032	Clip
4		1.021.270.00	Spooling motor

8.8
SPOOLING MOTOR

Pos	Qty	Order No.	Part Name
1		1.021.270.00	Spooling motor complete
1.1	1	1.021.240.06	Clip polished
1.2	1	24.16.5100	Clip D10
1.3	2	41.99.0103	Ball bearing
1.4	2	24.16.4220	Clip D22
1.5	4	37.02.0106	Springwasher
1.6	3	21.53.0457	Cyl.screw IS M 4 x 12
1.7	3	24.16.1040	Lockwasher to M 4
1.8	1	54.02.0418	Connector shell "MOLEX"
1.8.1	4	54.02.0411	Connector pins to above connector

8.9
TAPE TENSION SENSOR LEFT

TAPE TENSION SENSOR RIGHT

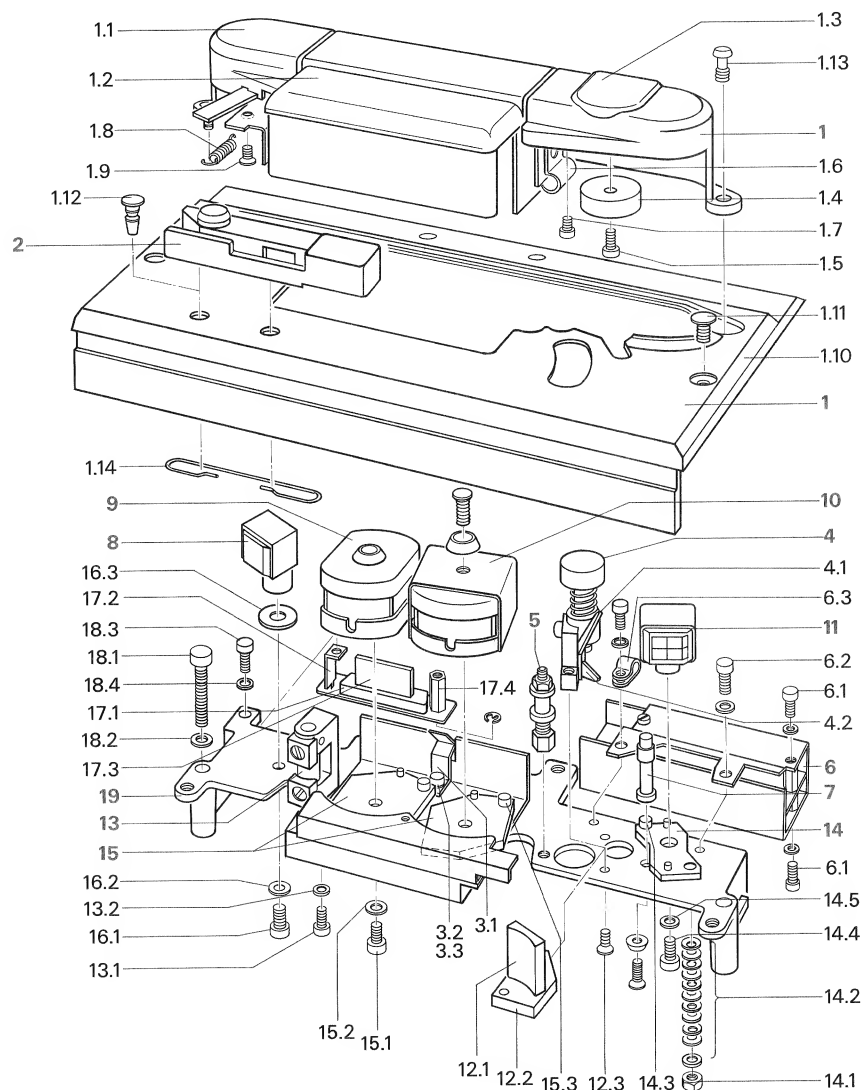


TAPE TENSION SENSOR LEFT

Pos	Qty	Order No.	Part Name
		1.811.110.82	Tape tension sensor left complete
1	1	1.811.117.82	Move sensor roller left complete
1.1	1	1.810.150.08	Move sensor roller
1.2	2	41.99.0106	Ball bearing ZZ, D 5/16 x 6
1.3	1	1.010.091.37	Pressure spring Shape D, D 15,7 X 17
1.4	1	21.51.2356	Countersunk screw IS M 3 x 10
1.5	1	1.811.111.02	Move sensor ring
1.6	1	1.167.838.02	Distance sleeve
1.7	1	24.16.4160	Clip D 16
1.8	1	1.811.111.06	Shaft for move roller
1.9	1	23.01.1064	Washer D 6,4/II
1.10	1	24.16.1060	Lock washer D 6,4/10
1.11	1	22.01.8060	Hexagonal nut M6
1.12	3	21.53.0357	Cyl.screw IS M 3 x 12
1.13	3	24.16.1030	Lock washer D 3,2/5,5
1.14	1	1.810.150.03	Cover for move and guide roller
2	1	1.811.113.00	Tape tension roller
2.1	1	1.811.112.00	Cover for tension roller
2.2	4	21.01.0203	Cyl.screw M 2 x 5
2.3	4	24.16.1020	Lock washer to M 2
2.4	1	1.811.110.02	End stop rubber sleeve
3.1	1	1.010.032.37	Tension spring short
4.1	1	1.010.105.37	Tension spring long
4.2	1	1.067.170.16	Shock absorber rubber
5.1	1	1.810.111.81	Base plate left complete
6.1	1	21.53.0353	Cyl.screw IS M 3 x 5
6.2	1	24.16.1030	Lock washer D 3,2/6
6.3	1	23.01.2032	Washer D 3,2/7
7	1	1.810.115.81	Air damper unit left complete
7.1	1	37.02.0101	Spring washer D 6,2//9,8
7.2	1	22.01.5060	Nut M 6
7.3	1	1.811.120.03	Air vent
8	1	1.811.731.83	Tape move sensor Board
8.1	2	21.53.0356	Cyl.screw IS M 3 x 10
8.2	2	24.16.1030	Lock washer D 3,2/6
8.3	2	23.01.1032	Washer D 3,2/6
9	1	1.811.730.00	Tape tension sensor board complete
9.1	2	21.53.0353	Cyl.screw M 3 x 5
9.2	2	24.16.1030	Lock washer D 3,2/6

TAPE TENSION SENSOR RIGHT

Pos	Qty	Order No.	Part Name
		1.811.120.81	Tape tension sensor right, complete
1	1	1.811.114.00	Guide roller right compl.
1.1	1	1.811.114.01	Guide roller
1.2	2	41.99.0106	Ball bearing ZZ, D 5/16 x 6
1.3	1	1.010.091.37	Pressure spring shape D, D 15,7 X 17
1.4	1	21.51.2356	Countersunk screw IS M 3 x 10
1.6	1	1.167.838.02	Distance sleeve
1.7	1	24.16.4160	Clip
1.8	1	1.811.111.06	Shaft for guide roller
1.9	1	23.01.1064	Washer
1.10	1	24.16.1060	Lock washer
1.11	1	22.01.8060	Hexagonal nut
1.12	3	21.53.0357	Cyl.screw IS M 3 x 12
1.13	3	24.16.1030	Lock washer D 3,2/5,5
1.14	1	1.810.150.03	Cover to guide roller
2	1	1.811.113.00	Tape tension roller right complete
2.1	1	1.811.112.00	Cover for tension roller
2.2	4	21.01.0203	Cyl.screw M 2 x 5
2.3	4	24.16.1020	Lock washer to M 2
2.4	1	1.811.110.02	End stop rubber sleeve
3.1	1	1.010.032.37	Tension spring short
4.1	1	1.010.105.37	Tension spring long
4.2	1	1.067.170.16	Shock absorber rubber
5.1	1	1.810.111.81	Base plate left complete
6.1	1	21.53.0353	Cyl.screw IS M 3 x 5
6.2	1	24.16.1030	Lock washer D 3,2/6
6.3	1	23.01.2032	Washer D 3,2/7
7	1	1.810.116.81	Air damper unit right, complete
7.1	1	37.02.0101	Plate spring D 6,2/9,8
7.2	1	22.01.5060	Nut M 6
7.3	1	1.811.120.03	Air vent
9	1	1.811.728.00	Tape tension sensor board right, compl.
9.1	2	21.53.0353	Cyl.screw M 3 x 5
9.2	2	24.16.1030	Lock washer D 3,2/6

8.10
HEAD BLOCK

Pos	Qty	Order No.	Part Name
1	1	1.810.186.00	Head block cover complete
1.1	1	1.810.171.00	Head cover
1.2	1	1.810.176.00	Screening flap
1.3	1	1.810.185.02	Cover for scissor hole
1.4	1	1.810.185.03	Cap
1.5	1	20.25.0105	Self tapping screw D 2,2 x 9,5
1.6	1	1.810.178.00	Right-hard bracket, riveted
1.7	1	21.53.0354	Cyl.screw IS M 3 x 6
1.8	1	1.010.025.37	Tension spring
1.9	3	21.51.2354	Countersunk screw M 3 x 6 IS
1.10	1	1.810.186.01	Head block cover plate
1.11	2	1.010.011.21	Oval head screw M 4 x 12
1.12	2	1.810.186.02	Plastic pressfit cover
1.13	2	1.010.010.21	Oval head screw M 4 x 8
1.14	1	1.810.400.05	Wire spring oval
2	1	1.810.402.81	Tape marker
3.1	1	1.020.880.05	Ground clip-spring
3.2	1	21.53.0354	Cyl.screw M 3 x 6
3.3	1	24.16.1030	Lock washer D 3,2/6
4	1	1.020.888.83	Tape scissors complete
4.1	1	1.020.888.70	Fixed blade
4.2	1	1.020.888.11	Blade movable
5	1	1.020.859.00	Tape guide bolt
6	1	Varies, see Pos.20	Head preamplifier
6.1	2	21.01.0279	Cyl.screw M 2,5 x 6
6.2	2	21.53.0355	Cyl.screw M 3 x 8
6.3	2	35.05.0311	Cable clamp D 4,8
7	1	1.020.850.24	Guide bolt right, long
8	1	Varies, see Pos.20	Erase head
9	1	Varies, see Pos.20	Record head
10	1	Varies, see Pos.20	Reproduce head
11	1	Varies, see Pos.20	Time code head
12.1	1	1.050.201.06	Tape rejecter bracket
12.2	1	1.050.201.07	Base plate of Tape rejecter
12.3	1	21.51.2355	Countersunk screw IS M 3 x 8
13	1	1.020.890.00	Scrape flutter idler
13.1	1	21.53.0355	Cyl.screw IS M 3 x 8
13.2	1	24.16.1030	Lock washer D 3,2/5,5

HEAD BLOCK

Pos	Qty	Order No.	Part Name
14	1	1.020.883.01	Swivel base plate for TC-head
14.1	1	22.01.8030	Hexagonal nut M 3 x 0,8
14.2	10	37.01.0101	Disc spring D 3,2/8
14.3	1	1.020.710.05	Azimuth alignment screw
14.4	1	21.53.0471	Cyl. screw IS M 4 x 14
14.5	1	24.16.1040	Lock washer D 4,3/7
15	2	1.020.850.06	Swivelbase plate for Rec/Reprohead
15.1	2	21.53.0455	Cyl.screw IS M 4 x 8
15.2	2	24.16.1040	Lock washer D 4,3/7
15.3	2	1.020.710.05	Azimuth alignment screw
16.1	1	21.53.0455	Cyl.screw IS M 4 x 8
16.2	1	24.16.1040	Lock washer D 4,3/7
16.3	2	1.020.500.01	Distance shim D 4,2/15,5 x 0,1
17.1	1	54.02.0188	50 pole D-Type Connector
17.2	1	1.050.201.03	Distanze bracket
17.3	1	1.050.102.11	Connection PCB for Erase head
17.4	1	1.050.201.02	Distance Hex bolt
18.1	3	21.53.0465	Cyl.screw IS M 4 x 3,5
18.2	3	24.16.1040	Lock washer D 4,3/7
18.3	2	21.53.0354	Cyl.screw m 3 x 6
18.4	2	24.16.1030	Lock washer D 3,2 x 5,5
19	1	1.050.299.01	Head block chassis, machined

HEAD BLOCK FULL TRACK (MONO)

Pos	Qty	Order No.	Part Name
20	1	1.050.201.00	Head Block Full track complete, until S.No. 1559
6	1	1.810.710.82	Head Preamplifier, until S.No. 1559
8	1	1.116.097.81	Erase head Full track
9	1	1.317.710.00	Record head
10	1	1.317.716.00	Reproduce head, until 1559
20	1	1.050.201.81	Head Block Full track, complete, from S.No. 1560
6	1	1.810.714.81	Preamplifier, from S.No. 1560
8	1	1.116.097.81	Erase head Full track
9	1	1.318.710.00	Record head, from S.No. 1560
10	1	1.318.716.00	Reproduce head, from S.No. 1560

HEAD BLOCK STEREO 0,75mm

Pos	Qty	Order No.	Part Name
20	1	1.050.202.00	Head Block 0,75 complete with full-track erase head, until S.No. 1559
6	1	1.810.711.82	Preamplifier, until S.No. 1559
8	1	1.116.097.81	Erase head, full track
9	1	1.317.730.00	Record head, until S.No. 1559
10	1	1.317.736.00	Reproduce head, until S.No. 1559
20	1	1.050.202.81	Head Block 0,75 complete, with full-track Erase head, from S.No. 1560
6	1	1.810.717.81	Preamplifier, from S.No. 1560
8	1	1.116.097.81	Erase head, full track
9	1	1.318.730.00	Record head, from S.No. 1560
10	1	1.318.736.00	Reproduce head, from S.No. 1560
20	1	1.050.203.00	Head Block 0,75 complete, with 2-track erase head, overlapping, until S.No. 1559
6	1	1.810.711.82	Preamplifier, until S.No. 1559
8	1	1.116.092.81	2-track erase head, overlapping
9	1	1.317.730.00	Record head, until S.No. 1559
10	1	1.317.736.00	Reproduce head, until S.No. 1559
20	1	1.050.203.00	Head Block 0,75 complete, with 2-track erase head, overlapping, from S.No. 1560
6	1	1.810.717.81	Preamplifier, from S.No. 1560
8	1	1.116.092.81	2-track erase head, overlapping
9	1	1.318.730.00	Record head, from S.No. 1560
10	1	1.318.736.00	Reproduce head, from S.No. 1560

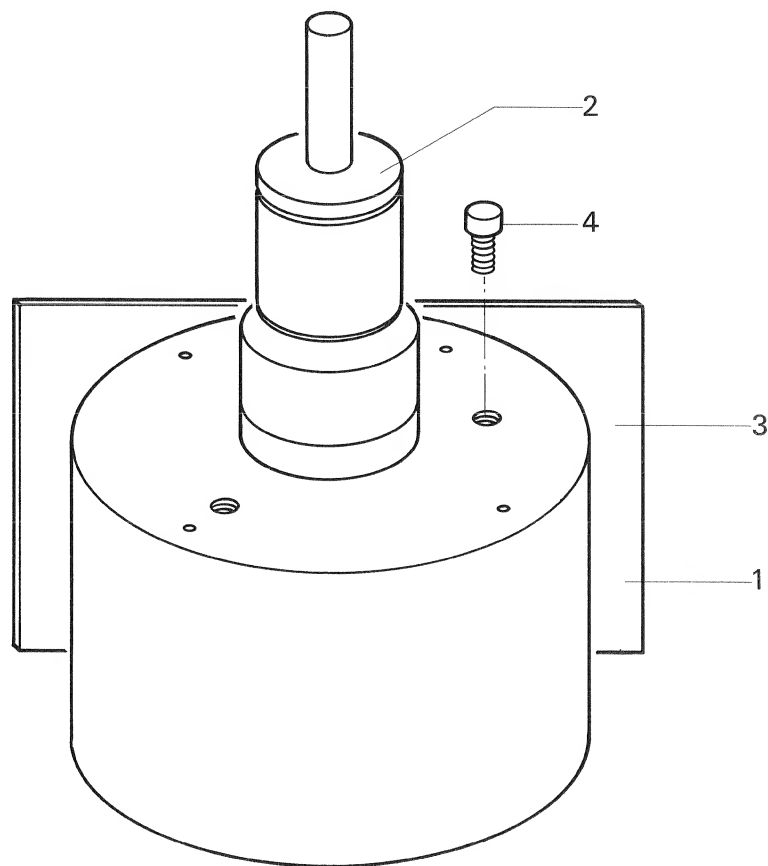
HEAD BLOCK 2-TRACK 2mm

Pos	Qty	Order No.	Part Name
20	1	1.050.207.00	Head Block 2-track 2mm with full-track erase head, until S.No. 1559
6	1	1.810.711.82	Preamplifier, until S.No. 1559
8	1	1.116.097.81	Erase head full track
9	1	1.317.720.00	Record head, until S.No. 1559
10	1	1.317.726.00	Reproduce head, until S.No. 1559
20	1	1.050.207.81	Head Block 2-track 2mm with full-track Erase head, from S.No. 1560
6	1	1.810.717.81	Preamplifier, from S.No. 1560
8	1	1.116.097.81	Erase head full track
9	1	1.318.720.00	Record head, from S.No. 1560
10	1	1.318.726.00	Reproduce head, from S.No. 1560

HEAD BLOCK 2-TRACK 2mm

Pos	Qty	Order No.	Part Name
20	1	1.050.204.00	Head Block 2-track 2mm complete with 2-track erase head overlapping until S.No. 1559
6	1	1.810.711.82	Preamplifier, until S.No. 1559
8	1	1.116.092.81	2-track erase head, overlapping
9	1	1.317.720.00	Record head, until S.No. 1559
10	1	1.317.726.00	Reproduce head, until S.No. 1559
20	1	1.050.204.81	Head Block 2-track 2mm complete with 2-track erase head overlapping from S.No. 1560
6	1	1.810.717.81	Preamplifier, from S.No. 1560
8	1	1.116.092.81	2-track Erase head, overlapping
9	1	1.318.720.00	Record head, from S.No. 1560
10	1	1.318.726.00	Reproduce head, from S.No. 1560
20	1	1.050.205.00	Head Block 2-track 2mm complete, with Time Code, and 2-track erasing until S.No. 1559
6	1	1.810.711.82	Preamplifier
8	1	1.116.810.01	2-track Erase head with Time Code
9	1	1.317.720.00	Record head, until S.No. 1559
10	1	1.317.726.00	Reproduce head, until S.No. 1559
11	1	1.116.810.02	Time Code head
20	1	1.050.205.81	Head Block 2-track 2mm complete, with Time Code, from S.No. 1560
6	1	1.810.711.81	Preamplifier, from S.No. 1560
8	1	1.116.810.01	2-track Erase head with Time Code
9	1	1.318.720.00	Record head, from S.No. 1560
10	1	1.318.726.00	Reproduce head, from S.No. 1560
11	1	1.116.810.02	Time Code head
20	1	1.050.206.00	Head Block 2-track 2mm complete, 2-track Erase head, not overlapping until S.No. 1559
6	1	1.810.711.82	Preamplifier until S.No. 1559
8	1	1.116.814.00	2-track Erase head, 0,8mm separation
9	1	1.317.720.00	Record head, until S.No. 1559
10	1	1.317.726.00	Reproduce head, until S.No. 1559
20	1	1.050.206.81	Head Block 2-track 2mm complete, 2-track Erase head not overlapping from S.No. 1560
6	1	1.810.717.81	Preamplifier, from S.No. 1560
8	1	1.116.814.01	2-track Erase head, 0,8mm separation
9	1	1.318.720.00	Record head
10	1	1.318.726.00	Reproduce head

**8.11
CAPSTAN MOTOR**



CAPSTAN MOTOR

VERSION 1

Pos	Qty	Order No.	Part Name
1	1	1.021.604.00	Capstan motor 0,25 "and 0,5" complete, equipped with sinter bearings, lubricated with PDP 65 oil.
2	1	1.021.601.07	Bearing cover
3	1	1.021.695.83	Tacho sensor unit (pcb)
4	3	1.010.035.21	Cyl.screw M 4 x 16 special

Attention: Apply one drop of PDP 65 oil every six months.
(Order No. 20.020.401.04)

This motor version is not marked with any sticker-label

VERSION 2

Pos	Qty	Order No.	Part Name
1	1	1.021.604.81	Capstan motor 0,25 "and 0,5" complete, equipped with sinter bearings, lubricated with grease "Constant GLY 2100"
2	1	1.021.601.07	Bearing cover
3	1	1.021.695.83	Tacho sensor unit (pcb)
4	3	1.010.035.21	Cyl.screw M 4 x 16 special

Attention: Use grease "Klüber Constant GLY 2100 for lubrication only!
Apply a few drops (Order No. 20.020.401.10) once a year.

This version of motor is marked with a red sticker-label

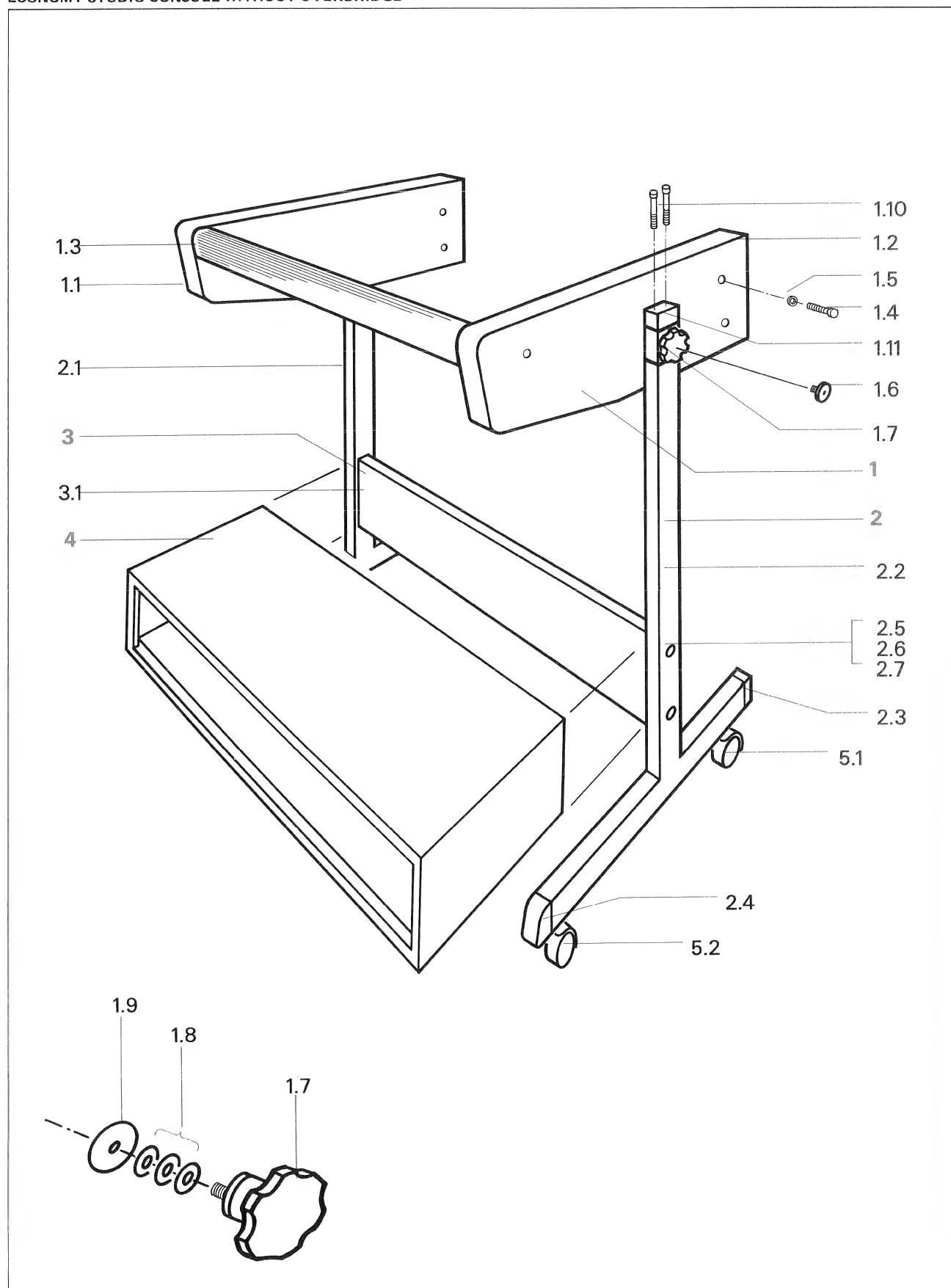
VERSION 3

Pos	Qty	Order No.	Part Name
1	1	1.021.625.00	Capstan Motor A 812 complete, equipped with ball bearings
2	1	1.021.621.09	Bearing cover
3	1	1.021.695.84	Tacho sensor unit (pcb)
4	3	1.010.035.21	Cyl.screw M 4 x 16 special

Attention: This motor contains permanently lubricated ball bearings.
DO NOT APPLY OIL! Damage to the ball bearings may occur!

This version of motor is marked with a white sticker-label

8.12
ECONOMY STUDIO CONSOLE WITHOUT OVERBRIDGE



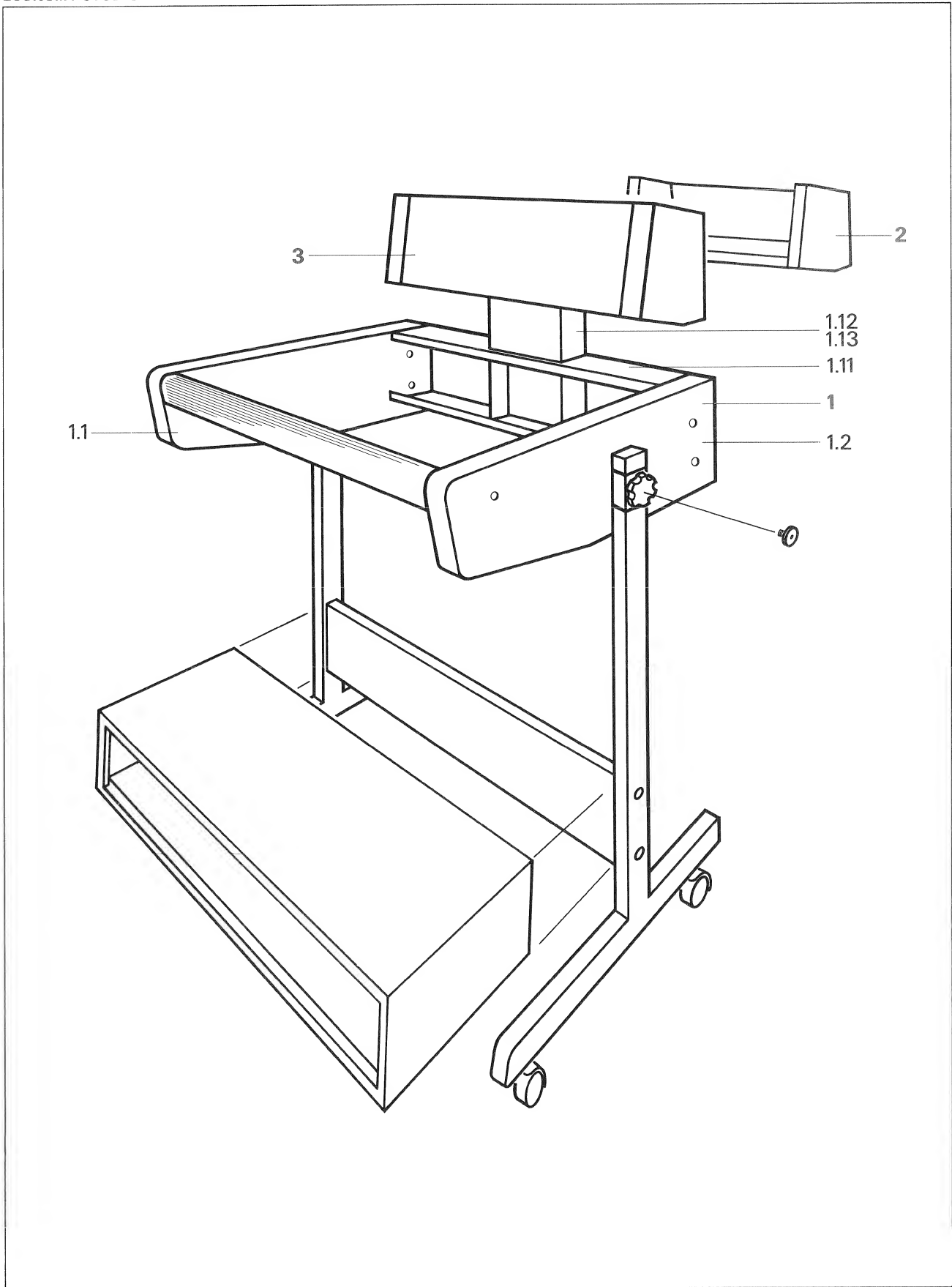
ECONOMY STUDIO CONSOLE WITHOUT OVERBRIDGE

Pos	Qty	Order No.	Part Name
		20.020.204.85	Console with traverse for machines without overbridge.
		20.020.204.95	Console with pedestal rack 19" for machines without overbridge
1		1.058.053.00	Console-set without overbridge
1.1	1	1.058.053.02	Wooden side panel left
1.2	1	1.058.053.03	Wooden side panel right
1.3	1	1.058.067.00	Leather hand rest
	2	21.53.0456	Cyl.screw IS M 4 x 10
	2	24.16.1040	Lock washer D 4,3/7
1.4	6	1.010.037.21	Cyl.screw IS M 5 x 30 black
1.5	10	24.16.1050	Lock washer D 5,3/9
1.6	2	1.058.053.05	Special screw M 10
1.7	2	1.058.053.06	Handwheel M 10
1.8	8	37.01.0128	Disc spring washer
1.9	2	1.058.053.04	Thrust-ring
1.10	4	1.010.052.21	Cyl.screw IS M 5 x 50 black
1.11	2	1.058.068.00	Bearing bracket
2		1.058.050.00	Set of legs
2.1	1	1.058.060.00	Leg left H=780/840 mm
2.2	1	1.058.061.00	Leg right H=780/840 mm
2.3	2	1.038.880.01	Plastic cover cap straight
2.4	2	1.058.001.05	Plastic cover chamfered
2.5	4	31.03.0106	Plastic cover
2.6	4	21.53.0571	Cyl.screw IS M 6 x 14
2.7	4	26.16.1060	Lock washer D 6,4 x 10
3		1.058.101.00	Traverse-set complete srews incl.
3.1	1	1.058.112.00	Traverse
4		1.058.057.00	19"-Pedestal rack
5.1	2	33.04.0270	Castor black without brake
5.2	2	33.04.0271	Castor black with brake

FILLER PANELS FOR 19" PEDESTAL RACK

	Finish	
	Gray paint	Anodized
1 unit width	1.918.011.00	1.918.001.00
2 units width	1.918.012.00	1.918.002.00
3 units width	1.918.013.00	1.918.003.00
Screw for 19" rack mounting M 6 x 12	21.99.0164	
Screw for 19" rack mounting M 6 x 16	21.99.0167	
Washer for 19" rack mounting D6,4/12,5	23.99.0121	

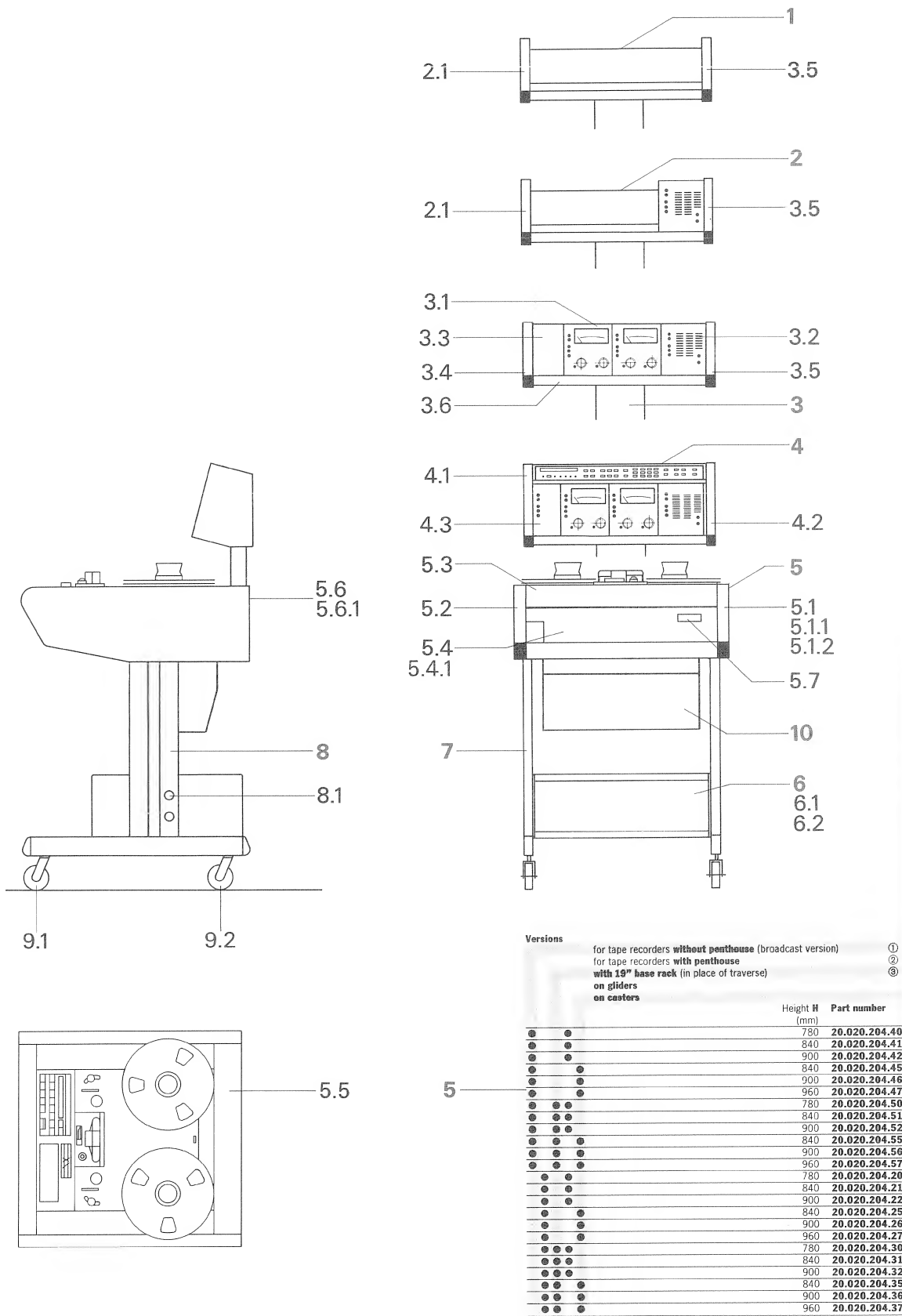
8.13
ECONOMY STUDIO WITH OVERBRIDGE



ECONOMY STUDIO WITH OVERBRIDGE

Pos	Qty	Order No.	Part Name
		20.020.204.65 20.020.204.75	Console with overbridge and traverse Console with overbridge and 19" pedestal rack
1		1.058.054.00	Console set with overbridge
1.1	1	1.058.054.01	Wooden side panel left
1.2	1	1.058.054.02	Wooden side panel right
1.12	1	1.058.066.00	Console rear panel with neck
1.13	1	1.058.100.17	Plate cover neck
1.14	4	1.010.034.21	Counter sunk screw M 4 x 8 black
2		21.811.560.00	Shelf
3			Overbridge-Versions: see paragraph 8.14

8.14
STUDIO—CONSOLE AND OVERBRIDGE



STUDIO—CONSOLE AND OVERBRIDGE

Pos	Qty	Order No.	Part Name
1		21.811.560.00	Shelf complete with neck + rear cover
2		21.811.563.00	Shelf with monitor complete
2.1		1.820.572.01	Wooden Side panel left
3		1.811.550.00	Overbridge housing without elec- tronics
3.1		1.810.320.81	VU—Panel 1 unit per channel
3.2	1	1.820.580.00	Monitor unit
3.3	1	1.810.002.04	Blank panel
3.4	1	1.820.550.03	Wooden side panel left
3.5	1	1.820.550.04	Wooden side panel right
3.6		1.811.551.00	Overbridge housing compl.
4		1.058.058.00	Panel extension for TLS—LCU— Installation, Incl. wooden sides
4.1	1	1.058.058.04	Wooden side panel LCU left
4.2	1	1.058.058.05	Wooden side panel LCU right
4.3	1	1.810.337.00	TC—channel control panel
5			Studio console complete, Order Number see table 5 on left side
5.1	1	1.058.100.13	Wooden side panel right
5.1.1	8	1.058.005.03	Sleeve black for M 5 screw cyl.
5.1.2	8	1.010.037.21	Cyl.screw M 5 x 30 black
5.2	1	1.058.100.12	Wooden side panel left
5.3	1	1.058.113.00	Hand rest, leather brown
5.4	1	1.058.100.07	Front cover, console
5.4.1	6	1.010.007.21	Oval head screw M 4 x 8 black
5.5	1	1.058.103.00	Rear panel (no shelf or overbridge version)
or	1	1.058.102.00	Rear (overbridge version)
5.6	1	1.058.100.17	Cover to overbridge
5.6.1	4	1.010.034.21	Countersunk screw M 4 x 8 black
5.7	3	33.03.0216	Hard grip plastic
6	1	1.058.101.00	Traverse set complete
or		1.058.057.00	Pedestal rack complete
6.1	4	21.53.0571	Cyl.screw IS M 6 x 14
or	4	21.53.0572	Cyl.screw IS M 6 x 16
6.2	4	24.16.1060	Lock washer D 6,4/10
7	1	1.058.011.00	Console leg 780/840 mm
or	1	1.058.015.00	Console leg 840/900 mm
or	1	1.058.017.00	Console leg 900/960 mm
	1	21.53.0621	Cyl.screw M 8 x 14
	1	23.01.1084	Washer D 8,4/15
	1	24.16.1080	Lock washer D 8,4/13

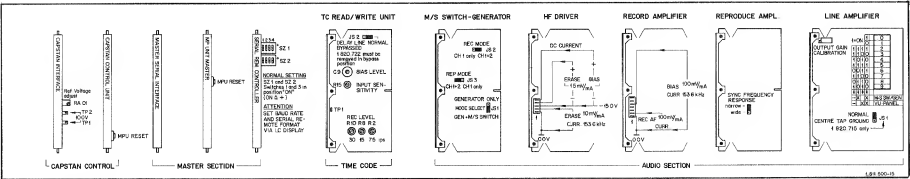
8	1	1.058.012.00	Console leg 780/840 mm	right
or	1	1.058.016.00	Console leg 840/900 mm	right
or	1	1.058.018.00	Console leg 900/960 mm	right
	1	21.53.0621	Cyl.screw M 8 x 14	
	1	23.01.1084	Washer D 8,4/15	
	1	24.16.1080	Fin washer D 8,4/13	
8.1	4	31.03.0106	Plastic cover black	
9.1	2	33.04.0271	Castor with brake	
9.2	2	33.04.0270	Castor without brake	
or	4	33.04.0103	Gliders D 50	
10	1	1.811.500.07	Hinged cover	

STUDER A812

8.15
LABEL

CAP-IF 811.775	CAP-CTR 820.764	M-S IF 820.753	M-MPU 811.786	REM IF 810.751	M-PER CTR 820.728	TC-R/W 820.721	TC-DELAY 820.722	HF-DRIV +	REC-AMPL 820.812	REP-AMPL 820.810	LINE AMPL 820.714	M/S SW 820.724	HF-DRIV 820.813	REC-AMPL 820.812	REP-AMPL 820.810	LINE AMPL
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1.811.500.14



1.811.500.15

↓ NEXT	← CURSOR	→ CURSOR	
↑ LAST	STORE	REMOTE	
30 IPS	15 IPS	7.5 IPS	
3.75 IPS	FRAME/S SELECT	R'HEARSE	SPEED SELECT
STEREO MONO	TAPE A TAPE B	CCIR NAB	SPOT ERASE
VARI SPEED	SET VARISP	SET TIMER	↑ UP
MASTER SAFE	FADER START	SET ADDRESS	↓ DOWN

1.820.090.36

Transparent labels for:
Tape deck remote control modul 1.328.255.00

BACK SPACE	◀	▶
PLAY	STOP	REC

1.328.255.03



1.010.023.43

↓ NEXT	← CURSOR	→ CURSOR	↑ LAST	STORE	WIND A/B	EDIT A/B	
30 IPS	15 IPS	7.5 IPS	3.75 IPS	REMOTE	SKIMMING	LAP	UNLOAD
R'HEARSE	RESET	LIFTER	FADER REC	FADER PLAY	SHUTTLE A/B	LIBRARY WIND	VS DISPL FORMAT
SPEED SELECT	7.5 15 IPS	3.75 7.5 IPS	15 30 IPS	VU PPM	DOLBY HX	TAPE GUARD	REVERSE PLAY
STEREO MONO	TAPE A TAPE B	CCIR NAB	DOWN UP	SET VARISP	SET ADDRESS	SET TIMER	
VARI SPEED	SPOT ERASE	FRAME/S SELECT	OFFSET SELECT	MASTER SAFE	HOLD REV. PLAY	TRANSFER REV. PLAY	AUTO INPUT
BACK SPACE	DISPLAY FORMAT		FADER START	SHUTTLE A/B	AUTO STOP	LIBRARY WIND	AUTO MUTE

1.820.090.37

AUTOLOCATOR REMOTE TIMER	SYNCHRONIZER	PARALLEL REMOTE
PRIMARY FUSE (SLOW BLOW)	100 - 140 V 200 - 240 V	T 6.3 A T 3.15 A

1.811.089.02



43.01.0104

15 IPS	30 IPS	SAFE	STEREO	CCIR	TAPE A	SPOT ERASE	REMOTE
7.5 IPS	3.75 IPS	VARISPEED	MONO	NAB	TAPE B	REHEARSE	FADER

1.820.011.02



1.011.210.02

15 IPS	30 IPS			CCIR	TAPE A		
7.5 IPS		VARISPEED		NAB	TAPE B	REHEARSE	FADER

1.820.022.02



1.011.210.02

15 IPS	30 IPS	SAFE	STEREO	CCIR	TAPE A		
7.5 IPS	3.75 IPS	VARISPEED	MONO	NAB	TAPE B		FADER

1.820.041.01



1.011.210.03

15 IPS	30 IPS			STEREO	CCIR	TAPE A	
7.5 IPS	3.75 IPS	VARISPEED		MONO	NAB	TAPE B	REHEARSE FADER

1.328.210.07



1.011.210.04

<input type="radio"/> 15 IPS	<input type="radio"/> 30 IPS	<input type="radio"/> SAFE	<input type="radio"/> STEREO	<input type="radio"/> CCIR	<input type="radio"/> TAPE A	<input type="radio"/> REMOTE
<input type="radio"/> 7.5 IPS	<input type="radio"/> 3.75 IPS	<input type="radio"/> VARISPEED	<input type="radio"/> MONO	<input type="radio"/> NAB	<input type="radio"/> TAPE B	<input type="radio"/> FADER

1.820.012.01



1.011.210.05

AUDIO CH 1 INPUT	AUDIO CH 1 OUTPUT
AUDIO CH 2 INPUT	AUDIO CH 2 OUTPUT
TIME CODE CH INPUT	TIME CODE CH OUTPUT
TIME CODE CH INPUT	TIME CODE CH INPUT

1.810.090.47

VU-METER PANEL	
CH1	CH1
CH2	CH2
AUDIO	CODE

1.810.335.01

1.011.210.07



1.011.210.08



1.011.210.09



1.011.210.10



1.011.210.11



1.011.210.13



1.011.210.14



1.011.210.15



1.011.210.17



1.011.210.18



1.011.210.19



1.011.210.20



1.011.210.23



1.011.210.24



1.011.210.25



1.011.210.29



1.011.210.30



1.011.210.31



1.011.210.32



LABEL

SET VARI	1.011.210.33	SPOT ERASE	1.011.210.42	BACK SPACE	1.011.210.45
SET TIMER	1.011.210.34	FADER START	1.011.210.43	SPEED SELECT	1.011.210.48
REHEA	1.011.210.35	LAP	1.011.210.44	HOLD	1.011.210.54
LIBR WIND	1.011.210.41				

BEFORE REMOVING OR INSERTING CARDS, MACHINE MUST BE SWITCHED OFF MINIMUM 5 SEC

1.820.500.31

9. Spare parts/Diagrams accessories

PARALLEL TAPE DECK REMOTE CONTROL

CABINET **20.820.366.00**

Tape transport remote control table cabinet		
with 15m connection cable	1.328.250.00	9/1
■ Tape deck remote control board	1.328.251.00	9/3

PARALLEL TAPE DECK REMOTE CONTROL

MODULE (SET) **20.820.367.00**

Tape transport remote control module.....	1.328.255.00	9/5
including 15m connection cable	1.328.295.00	
■ Pushbutton board	1.328.256.00	9/7
■ Connector board.....	1.328.257.00	9/9

VARI-SPEED CONTROLLER UNIT

21.328.253.00

For installation into table cabinet (without cable)	1.328.253.00	9/11
Vari-speed remote control module (without cable).....	21.328.290.00	
for intallation into remote stand	1.328.290.00	9/11
■ Vari-speed control board.....	1.810.762.82	9/13

VARI-SPEED CONTROL MODULE (DE LUXE)

Vari-speed remote control (witout cable)	1.328.280.00	9/15
■ Vari-speed display and keyboard.....	1.328.281.00	9/17
■ Vari-speed connectors board.....	1.328.283.00	9/19
■ Vari-speed main board	1.328.282.20	9/20

REMOTE COUNTER (RS 232)

21.328.275.00

including 15m connection cable	1.328.297.00	
Remote counter	1.328.275.00	9/23
■ CPU board	1.328.276.20	9/25
■ Display board.....	1.328.277.00	9/27

SERIAL REMOTE COUNTER (LAP)

20.820.368.00

Including 15m connection cable	1.328.293.81	
Serial remote counter	1.328.270.00	9/29
■ Stabilizer board	1.328.213.00	9/31
■ Timer driver board	1.328.272.00	9/33
■ Timer display board	1.328.271.00	9/35

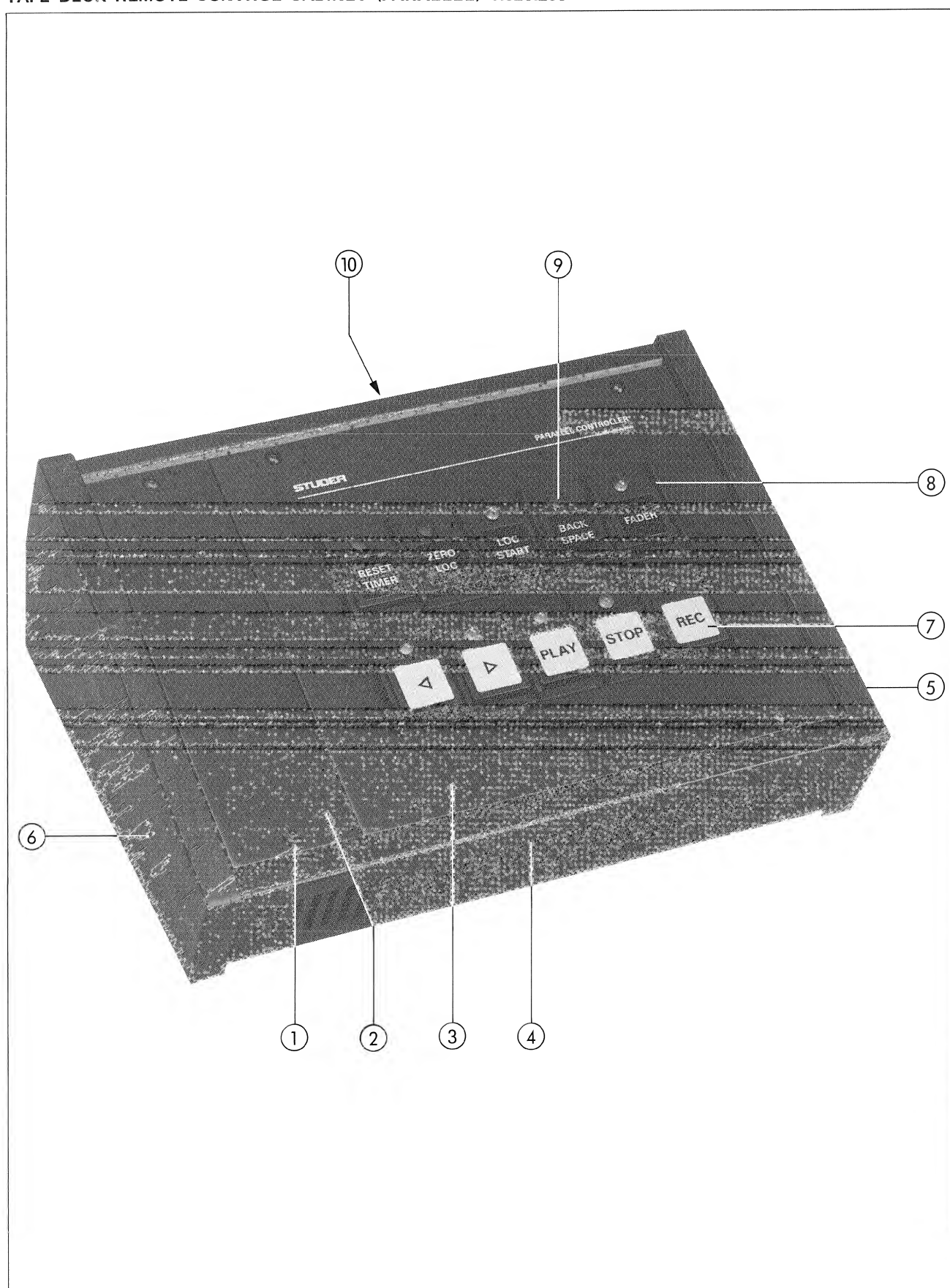
SERIAL REMOTE CONTROL CABINET

20.820.369.00

Modul for installation into remote stand	20.820.370.00	
Connecting cable (included in both)	1.328.293.81	
Serial remote control CABINET.....	1.328.210.00	9/37
Serial remote control MODULE.....	1.328.220.00	9/37
■ Stabilizer board	1.328.213.00	9/39
■ Remote control driver board	1.328.211.21	9/41
■ Remote control display board.....	1.328.212.00	9/43
■ Shuttle board.....	1.328.214.00	9/45

SERIAL REMOTE SELECTOR	21.328.248.00	
including 1m connetion cable	1.328.269.00	
Serial remote selector	1.328.248.00	9/47
▪ Remote selector keyboard.....	1.328.245.00	9/49
▪ Remote selector connectors board.....	1.328.246.00	9/51
PARALLEL CHANNEL REMOTE CONTROL MODUL	21.328.260.00	
PARALLEL CHANNEL REMOTE CONTROL INTERFACE	1.328.901.00	
Parallel channel remote control modul	1.328.260.00	9/53
▪ Display board	1.328.261.00	9/55
▪ Key board (1-3).....	1.328.262.00	9/57
▪ Channel remote interface.....	1.328.264.00	9/59
▪ Channel remote logic board	1.328.265.00	9/61

TAPE DECK REMOTE CONTROL CABINET (PARALLEL) 1.328.250



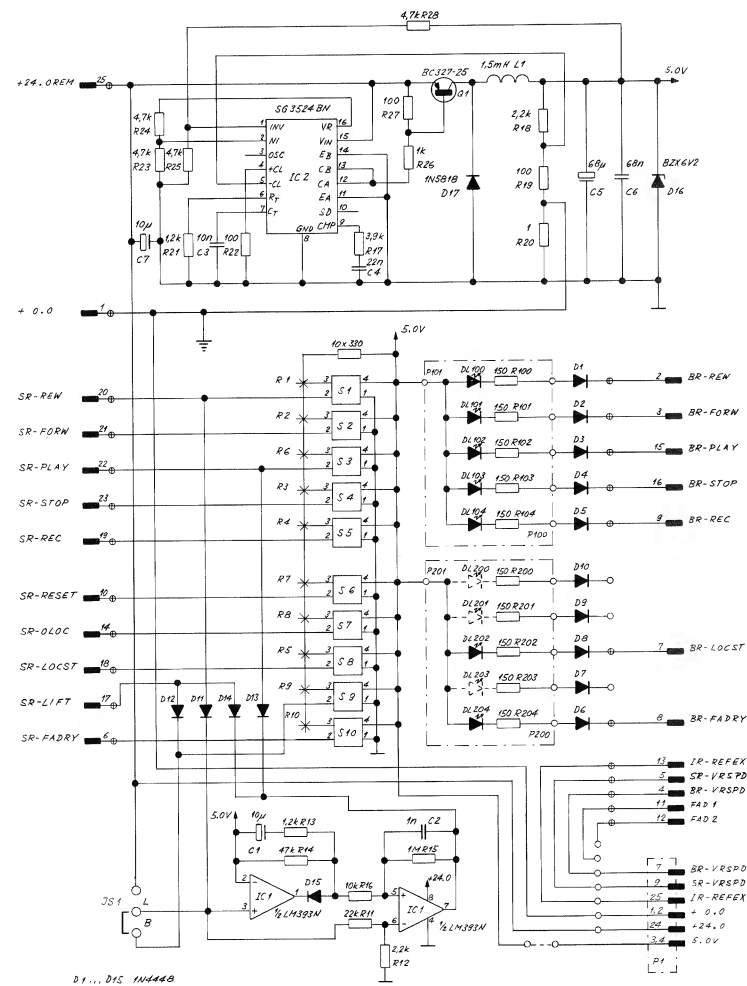
TAPE DECK REMOTE CONTROL CABINET (PARALLEL) 1.328.250

	ANZ	BESTELLNr.	BEZEICHNUNG	SPEZIFIKATION
	1	1.328.250.00	Laufwerk-Fernsteuerung (parallel) (Klebeschilder: Paragraph 8.12)	
	1	1.328.251.00	Laufwerk control Print	
	4	1.328.250.08	Sechskantbolzen	
	4	1.010.025.21	Linsenkopfschraube	M3x6
	4	24.16.1030	Sicherungsscheibe	
	4	23.01.1032	Unterlagsscheibe	
01	6	1.010.025.21	Linsenkopfschraube	M3x6
02	1	1.328.250.05	Blindabdeckung	
03	1	1.328.250.03	Frontblende	
04	1	1.820.921.00	Gehäuse kompl. (mit Pos 5,6,10 und Füßen)	
	4	31.02.0211	Fuss	
05	1	1.328.250.02	Holzseitenwand	rechts
	4	21.53.0454	Z-Schraube IS	M4x6
	4	24.16.1040	Unterlagsscheibe	
06	1	1.328.250.01	Holzseitenwand	links
	4	21.53.0454	Z-Schraube IS	M4x6
	4	24.16.1040	Unterlagsscheibe	
07	10	1.011.210.01	Drucktaste	
	10	1.010.202.37	Druckfeder	
08	2	1.810.300.03	Drucktastengehäuse	
	2	1.810.300.06	Dämpfungstreifen	
09	3	1.810.300.21	Abdeckkappe	
10	1	35.03.0120	Kabelbefestigungssockel	
	1	21.51.8454	LIN-Schraube IS	M4x6
	1	24.16.1040	Sicherungsscheibe	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.250.00	Tape deck remote control cabinet (parallel) (self-adhesive labels:Paragraph8.12)	
	1	1.328.251.00	TAPE DECK REMOTE CONTROL PCB	
	4	1.328.250.08	Hex stud bolt	
	4	1.010.025.21	Round head allen screw	M3x6
	4	24.16.1030	Fin washer	
	4	23.01.1032	Washer	
01	6	1.010.025.21	Round head allen screw	M3x6
02	1	1.328.250.05	Dummy plate	
03	1	1.328.250.03	Front cover	
04	1	1.820.921.00	Housing compl. (with pos.5, 6, 10 and feet)	
	4	31.02.0211	Foot	
05	1	1.328.250.02	Side panel	right
	4	21.53.0454	Allen screw	M4x6
	4	24.16.1040	Fin washer	
06	1	1.328.250.01	Side panel	left
	4	21.53.0454	Allen screw	M4x6
	4	24.16.1040	Fin washer	
07	10	1.011.210.01	Push button	
	10	1.010.202.37	Pressure spring	
08	2	1.810.300.03	Push button housing	
	2	1.810.300.06	Damping strip	
09	3	1.810.300.21	Plastic cover	
10	1	35.03.0120	Cable mounting support	
	1	21.51.8454	Round head allen screw	M4x6
	1	24.16.1040	Fin washer	

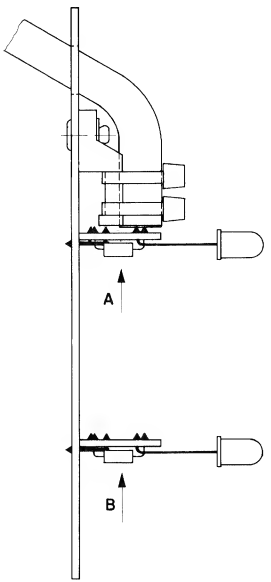
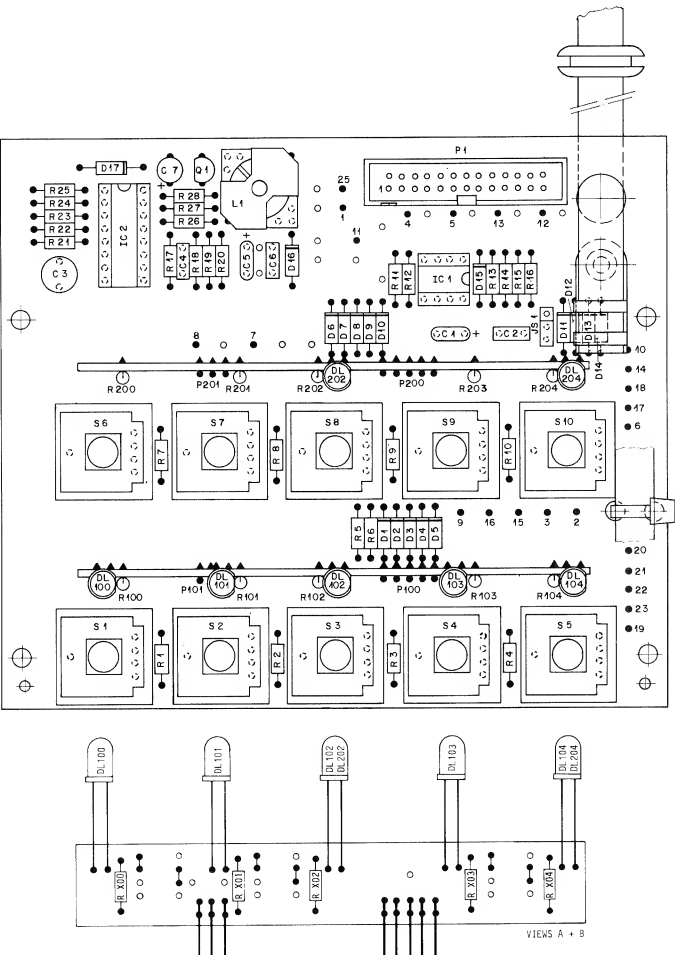
TAPE DECK REMOTE CONTROL CABINET (PARALLEL) 1.328.250.00

—TAPE DECK REMOTE CONTROL PCB 1.328.252.00



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STUDER		TAPE DECK REMOTE CONTROL			SC	1. 328 251-00

TAPE DECK REMOTE CONTROL CABINET (PARALLEL) 1,328.250.00
-TAPE DECK REMOTE CONTROL PCB 1.328.252.00



IND.	POS.ND.	PART ND.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC....1	50-05-0283	LM939M			NS-Thomson
IC....2	50-05-0279	5625248N			SG
J5....1				See note 1	
L....1	1-022-197-00		1.5 MH		St
P....1	54-14-2003		26 cont.	See note 2	
P....100	54-01-0249		5 cont.	AMP Nr. 163-740-5	
P....101	54-01-0227		3 cont.	AMP Nr. 163-740-1	
P....200	54-01-0249		5 cont.	AMP Nr. 163-740-1	
P....201	54-01-0227		3 cont.	AMP Nr. 163-740-1	
Q....1	50-03-0351	BC127-25			ITT-PhSiv
R....1	57-11-4331		330 Ohm		
R....2	57-11-4331		330 Ohm		
R....3	57-11-4331		330 Ohm		
R....4	57-11-4331		330 Ohm		
R....5	57-11-4331		330 Ohm		
R....6	57-11-4331		330 Ohm		
R....7	57-11-4331		330 Ohm		
R....8	57-11-4331		330 Ohm		
R....9	57-11-4331		330 Ohm		
R....10	57-11-4331		330 Ohm		
R....11	57-11-4223		22 kOhm		
R....12	57-11-4222		2.2 kOhm		
R....13	57-11-4105		1 kOhm		
R....14	57-11-4473		47 kOhm		
R....15	57-11-4103		10 kOhm		
R....16	57-11-4103		10 kOhm		
R....17	57-11-4103		100 Ohm		
R....18	57-11-4103		100 Ohm		
R....19	57-11-4103		100 Ohm		
R....20	57-11-4103		100 Ohm		
R....21	57-11-4103		100 Ohm		
R....22	57-11-4103		100 Ohm		

STUDER (00) 85/03/01 P8 TAPE DECK REMOTE CONTROL 1.328.251-00 PAGE 2

IND.	POS.ND.	PART ND.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R....23	57-11-4472		4.7 kOhm		
R....24	57-11-4472		4.7 kOhm		
R....25	57-11-4472		4.7 kOhm		
R....26	57-11-1007		100 Ohm		
R....27	57-11-4103		100 Ohm		
R....28	57-11-4472		4.7 kOhm		
R....100	57-11-4151		150 Ohm		
R....101	57-11-4151		150 Ohm		
R....102	57-11-4151		150 Ohm		
R....103	57-11-4151		150 Ohm		
R....104	57-11-4151		150 Ohm		
R....105	57-11-4151		150 Ohm		
R....201	57-11-4151		150 Ohm		
R....202	57-11-4151		150 Ohm		
R....203	57-11-4151		150 Ohm		
R....204	57-11-4151		150 Ohm		
S....1				See note 3	
S....2				See note 3	
S....3				See note 3	
S....4				See note 3	
S....5				See note 3	
S....6				See note 3	
S....7				See note 3	
S....8				See note 3	
S....9				See note 3	
S....10				See note 3	

STUDER (00) 85/03/01 P8 TAPE DECK REMOTE CONTROL 1.328.251-00 PAGE 3

IND.	POS.ND.	PART ND.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C....1	50-04-2100		10 uF	20%, 16V, Sel	Ph
C....2	50-04-2102		1 uF	20%, 16V, RETP	
C....3	50-05-1103		10 uF	1%, Pb	
C....4	50-04-0203		22 uF	10%, RETP	
C....5	50-26-0680		68 uF	20%, 6-3V, Sel	Ph
C....6	50-04-0683		68 uF	20%, RETP	
C....7	50-22-6100		10 uF	-10%, 40V, Et	
D....1	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....2	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....3	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....4	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....5	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....6	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....7	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....8	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....9	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....10	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....11	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....12	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....13	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....14	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....15	50-04-0125		IN4448		Fc-ITT-PhSesTf
D....16	50-04-1118		6-2 V Z	87X83C 6-2, RZK55C 6-2, ZPD 6-2	ITT-Ses
D....17	50-04-0512		IN5818	IN5819	Not
DL....100	50-04-2112		M5353	CM-5848, HMP-3401	CM-G1-HP
DL....101	50-04-2112		M5353	CM-5848, HMP-3401	CM-G1-HP
DL....102	50-04-2112		M5353	CM-5848, HMP-3401	CM-G1-HP
DL....103	50-04-2112		M5353	CM-5848, HMP-3401	CM-G1-HP
DL....104	50-04-2111		M5753	CM-2848, HMP-3301	CM-G1-HP
DL....200			not used		
DL....201	50-04-2112		M5353	CM-5848, HMP-3401	CM-G1-HP
DL....202			not used		
DL....203			not used		
DL....204	50-04-2112		M5353	CM-5848, HMP-3401	CM-G1-HP

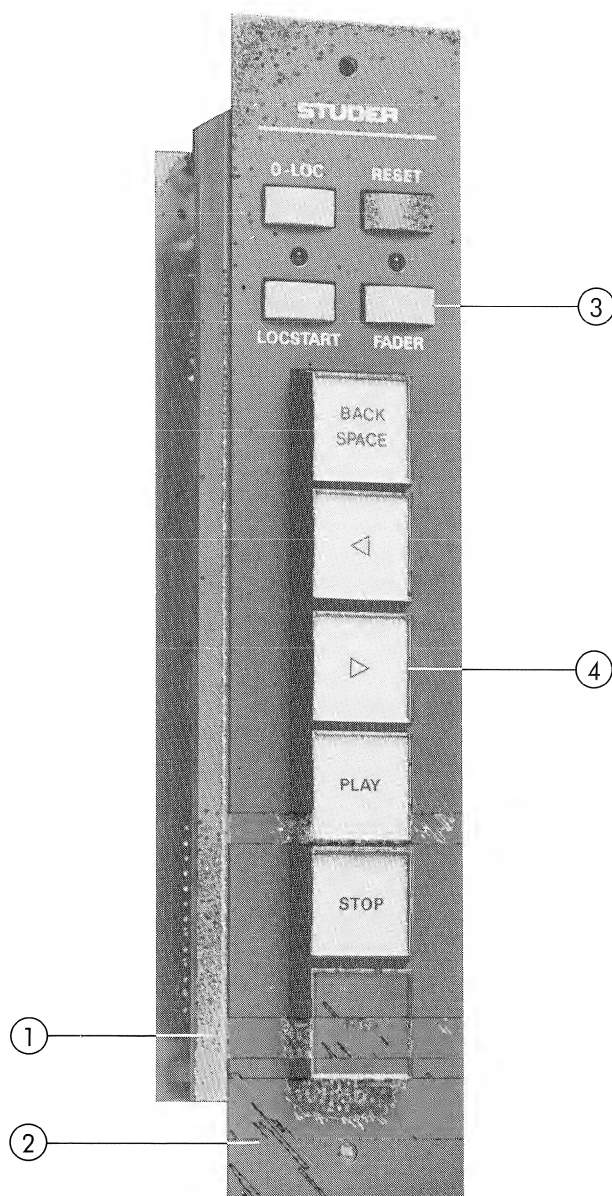
STUDER (00) 85/03/01 P8 TAPE DECK REMOTE CONTROL 1.328.251-00 PAGE 1

IND.	POS.ND.	PART ND.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1	- Contact pin:	Studer	54-01-0020	Berg 75 100-102-36	
		Studer	54-01-0021	Philips 26-02-00 (R000)	
Note 2	- Connectors:	Yamaichi	FAP-26-08/74	Hurdy 8P 9 8 26 R00 GS	
Note 3	- Switch:	Studer	55-03-0261	Rafi 3-11001-110	
	Extender:	Studer	55-03-0262	Rafi 3-51101-690	
CapCeramic: ElElectrolytic: SelSolid aluminium					
PETPolyesterfilm: PpPolypropylene					
MANUFACTURER: CM-Chicago Miniatur, FcFairchild					
G-General Instruments, HPHewlett Packard					
ITT-Intermetall, Mot-Motorola					
M-Mitsubishi, S-Semiconductor, P-Philips, S-SesSescom					
Si-Silicon General, Si-Siemens, St-Studer, Th-Thomson					
Ti-Texas Instruments, T-Telefunken					

ORIG 85/03/01

STUDER (00) 85/03/01 P8 TAPE DECK REMOTE CONTROL 1.328.251-00 PAGE 4

TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255



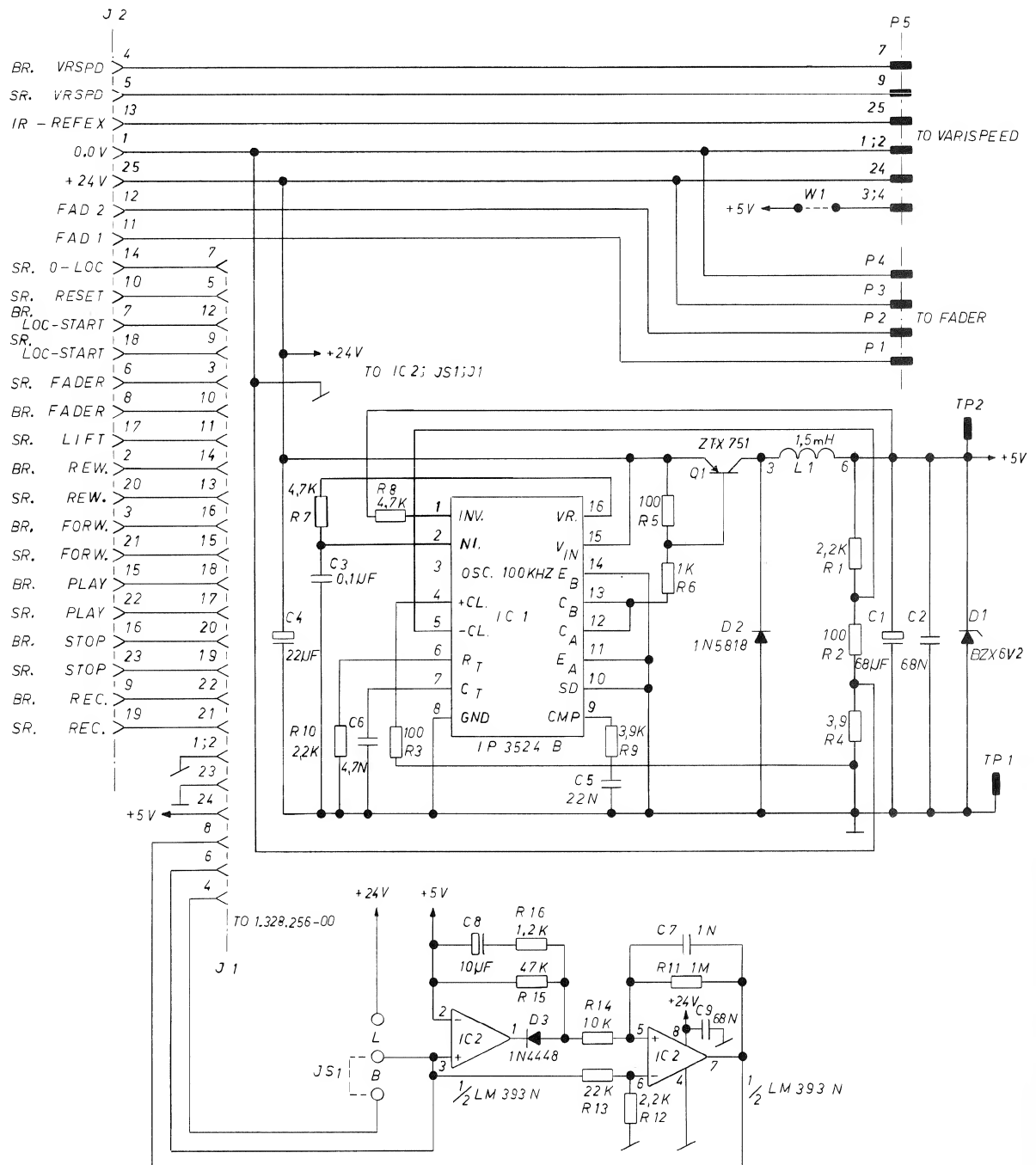
TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255

	ANZ	BESTELNR.	BEZEICHNUNG	SPEZIFIKATION
	1	1.328.255.00	Parallele Laufwerksteuerung (Schilder: Paragraph 8.12)	
	1	1.328.256.00	Drucktasten Print	
	1	1.328.257.00	Connector Print	
	4	1.010.110.27	Sechskant-Gewinde-Bolzen	
	4	21.53.0354	Z-Schraube IS	M3x6
	4	24.16.1030	Sicherungsring	
	4	23.01.1032	Unterlagsscheibe	
01	1	1.328.255.01	Träger	
02	1	1.328.255.02	Frontplatte	
03	1	55.15.0122	Tasten	rot
	3	55.15.0128	Tasten	grau
04	1	55.15.0201	Tastenkopf-Abdeckung	konkav
	5	55.15.0202	Tastenkopf-Abdeckung	flach
	1	55.15.0212	Folie	rot
	5	55.15.0221	Folie	weiss
	6	55.15.0228	Tastenkopf-Rahmen	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.255.00	Tape deck remote control module (parallel) (labels: Paragraph 8.12)	
	1	1.328.256.00	PUSH BUTTON PCB	
	1	1.328.257.00	CONNECTOR PCB	
	4	1.010.110.27	Hex stud bolt	
	4	21.53.0354	Allen screw	M3x6
	4	24.16.1030	Fin washer	
	4	23.01.1032	Washer	
01	1	1.328.255.01	Support	
02	1	1.328.255.02	Front plate	
03	1	55.15.0122	Push button knob	red
	3	55.15.0128	Push button knob	grey
04	1	55.15.0201	Push button cover	concave
	5	55.15.0202	Push button cover	flat
	1	55.15.0212	Diffusing screen	red
	5	55.15.0221	Diffusing screen	white
	6	55.15.0228	Push button frame	

STUOER (00) 86/02/13 CM PUSHBUTTON BOARD 1.328.256-00 PAGE 3

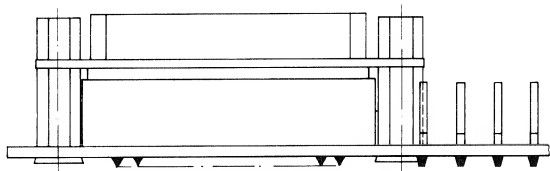
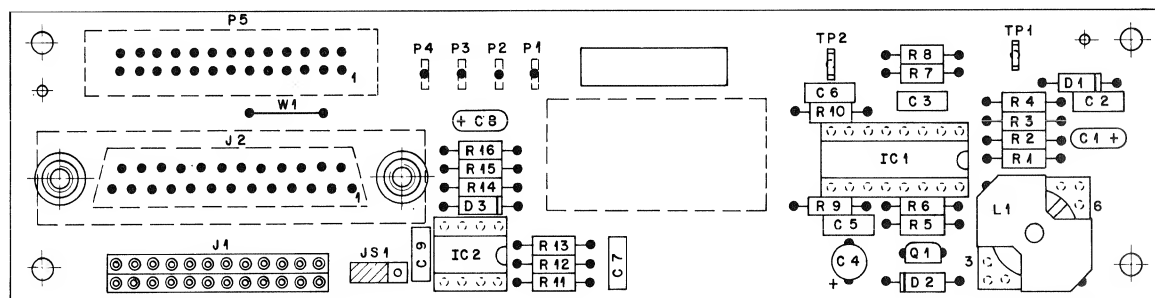
TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255.00
—CONNECTOR PCB 1.328.257.00



ZTX 751
 E B C
 BOTTOM VIEW
 1 2 3

13.02.86 C. METZ	MODUL PARALLEL A727, A812, A820	PAGE 1 OF 1
STUDER	CONNECTORS BOARD	SC 1.328.257-00

TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255.00
-CONNECTOR PCB 1.328.257.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.26.0680	68 u	20% 6.3V	SAL		R.....6	57.11.4102	1.0 k	2% 0207	MF	
C.....2	59.06.0683	.068 u	10% 6.3V	PETP		R.....7	57.11.4472	4.7 k	2% 0207	MF	
C.....3	59.06.0104	.1 u	10% 6.3V	PETP		R.....8	57.11.4472	4.7 k	2% 0207	MF	
C.....4	59.22.6220	22 u	-20% 35V	EL		R.....9	57.11.4392	3.9 k	2% 0207	MF	
C.....5	59.06.0223	.022 u	10% 6.3V	PETP		R.....10	57.11.4222	2.2 k	2% 0207	MF	
C.....6	59.06.0472	4700 p	10% 6.3V	PETP		R.....11	57.11.4105	1 M	2% 0207	MF	
C.....7	59.06.0102	1000 p	10% 6.3V	PETP		R.....12	57.11.4222	2.2 k	2% 0207	MF	
C.....8	59.26.2100	10 u	20% 16V	SAL		R.....13	57.11.4223	22 k	2% 0207	MF	
C.....9	59.06.0683	.068 u	10% 6.3V	PETP		R.....14	57.11.4103	10 k	2% 0207	MF	
D.....1	50.04.1118	8ZX 6V2	5% 6x2 V 0.40 W	Z		R.....15	57.11.4473	47 k	2% 0207	MF	
D.....2	50.04.0512	1 N 5818		SCHOTTKY	Mot.	R.....16	57.11.4122	1.2 k	2% 0207	MF	
D.....3	50.04.0125	1 N 4448	75 V; 100 mA; S1			TP.....1	54.02.0320	2.8 0 0.8		SOLDERING PIN	
IC.....1	50.05.0279	1P 3524 B		REGULATING PULSE WIDTH MODULATOR	IPS.	TP.....2	54.02.0320	2.8 0 0.8		SOLDERING PIN	
IC.....2	50.05.0283	LM 393 N		DUAL LOW POWER COMPARATOR	T1.						
J.....1	53.03.0212	2 0 12 PIN		D-TYPE, 25 PIN PRINT FEMALE CONNECTOR							
J.....2	54.13.0023										
JS.....1	54.01.0021	2 0 0.63		JUMPER							
L.....1	1.022.197.00	1.5 mH		CHOKE	St.						
P.....1	54.02.0320	2.8 0 0.8		SOLDERING PIN							
P.....2	54.02.0320	2.8 0 0.8		SOLDERING PIN							
P.....3	54.02.0320	2.8 0 0.8		SOLDERING PIN							
P.....4	54.02.0320	2.8 0 0.8		SOLDERING PIN							
P.....5	54.14.2003			26 PIN PRINT MALE CONNECTOR							
Q.....1	50.03.0352	ZTX 751 S	60 V; 2 A; PNP SI		Fe.						
R.....1	57.11.4222	2.2 k	2% 0207	MF							
R.....2	57.11.4101	100	2% 0207	MF							
R.....3	57.11.4101	100	2% 0207	MF							
R.....4	57.11.4399	3.9	2% 0207	MF							
R.....5	57.11.4101	100	2% 0207	MF							

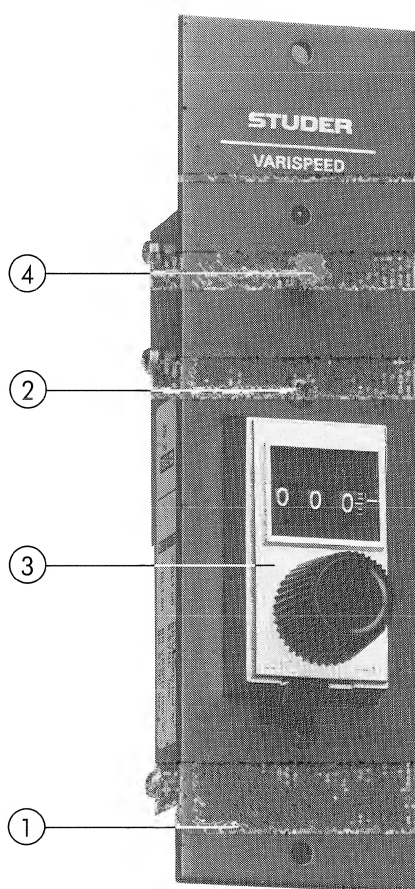
CER=Ceramic, EL=Electrolytic, MP=Metallized Paper, MPC=Metallized Polycarbonate, MPEP=Metallized Polyester, PC=Polycarbonate, PETP=Polyester, PP=Polypropylene, PS=Polystyrol, SAL=Solid Aluminium, TA=Tantal, Cermet=Ceramic Metal, MF=Metal Film.

MANUFACTURERS :
 Fe = Ferranti
 IPS = Integrated Power Semiconductors Limited
 Mot = Motorola
 St = Studer
 T1 = Texas Instruments

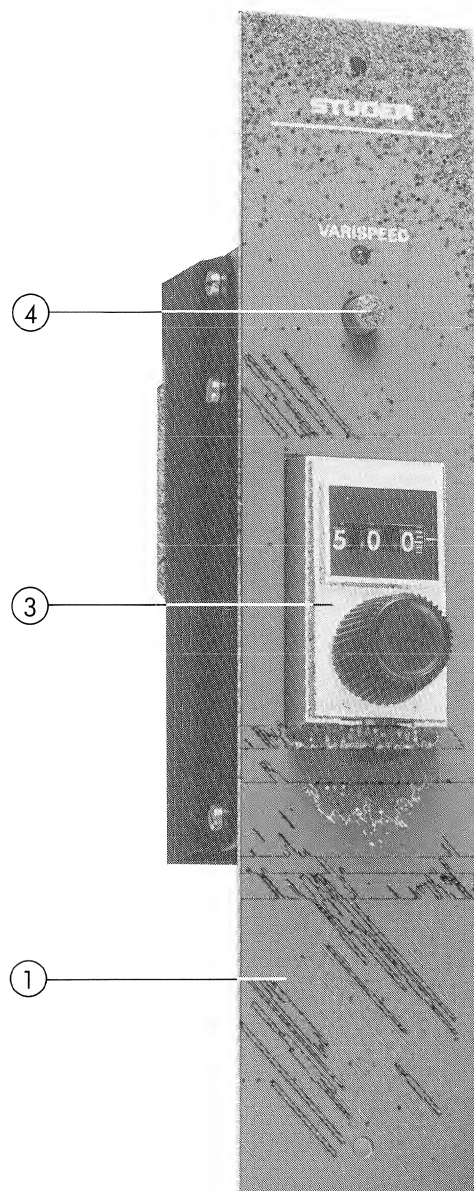
ORIG 86/02/14

VARISPEED CONVERSION KIT (FOR PAR. REMOTE CONTROL ONLY) 1.328.253.00
VARISPEED CONTROL MODULE 1.328.290.00

1.328.253.00



1.328.290.00

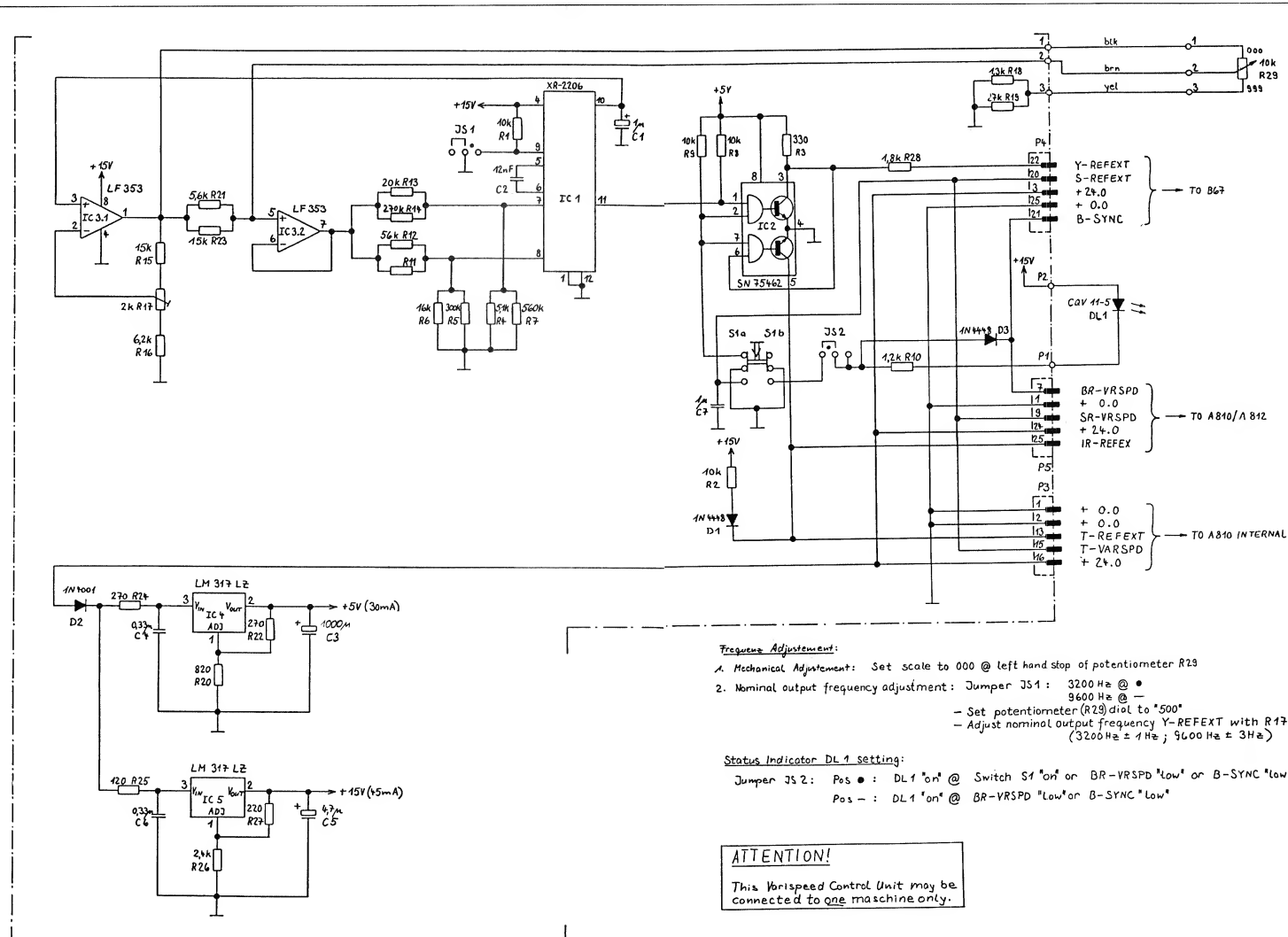


VARISPEED CONVERSION KIT (FOR PAR. REMOTE CONTROL ONLY) 1.328.253.00
VARISPEED CONTROL MODULE 1.328.290.00

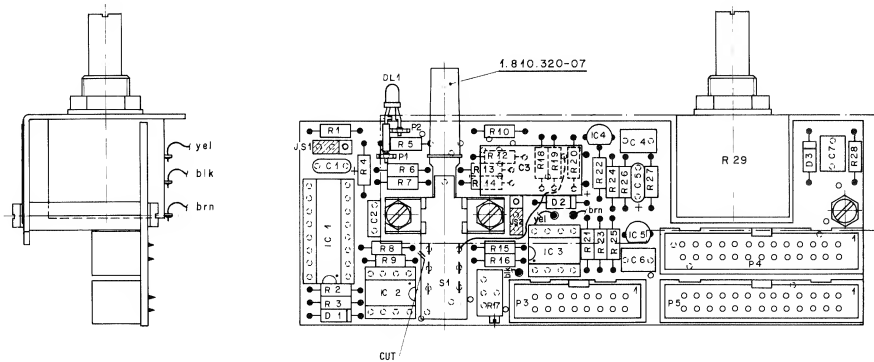
	ANZ	BESTELLN.R.	BEZEICHNUNG	SPEZIFIKATION
	1	1.328.253.00	Nachrüstset Varispeed (nur für parallele Fernsteuerung)	
	1	1.328.290.00	Varispeed Einheit	
	1	1.810.762.82	Varispeed control Print	M2,5x6
	3	21.01.0279	Z-Schraube	
	3	24.16.1025	Sicherungsscheibe	
	1	1.328.290.04	Isolation	
01	1	1.328.250.10	Frontblende	
	1	1.810.330.02	Unterlage	
	1	1.328.290.01	Träger	
	1	1.328.290.02	Frontplatte	
01	2	1.010.025.21	Linsenkopfschraube	M3x6
03	1	58.99.0116	Feinantrieb mit Ableseskala	
04	1	1.810.320.07	Druckknopf, lang	rot

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.253.00	Varispeed conversion kit (for parallel remote control only)	
	1	1.328.290.00	Varispeed control module	
	1	1.810.762.82	VARISPEED CONTROL PCB	M2.5x6
	3	21.01.0279	Slotted cheese head screw	
	3	24.16.1025	Fin washer	
	1	1.328.290.04	Insulation	
01	1	1.328.250.10	Front cover	
	1	1.810.330.02	Spacer	
	1	1.328.290.01	Support	
	1	1.328.290.02	Front plate	
02	2	1.010.025.21	Round head allen screw	M3x6
03	1	58.99.0116	Fine drive with reading scale	
04	1	1.810.320.07	Push button, long	red

VARISPEED CONVERSION KIT (FOR PAR. REMOTE CONTROL ONLY) 1.328.253.00
 VARISPEED CONTROL MODULE 1.328.290.00
 -VARISPEED CONTROL PCB 1.810.762.82



VARISPEED CONVERSION KIT (FOR PAR. REMOTE CONTROL ONLY) 1.328.253.00
VARISPEED CONTROL MODULE 1.328.290.00
-VARISPEED CONTROL PCB 1.810.762.82



IND.	POS.Nº.	PART N°.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C++0001	59.26.9109	1 uF	20%, 40V + Sal	see note 1	Ph
C++0002	59.99.0220	12 uF	5%, 50V + Car		
C++0003	59.99.1700	1000 uF	6+3V 1 < 21mm Ø < 10mm		
C++0004	59.10.0335	0.33uF	10%, 63V + Petp		Ph
C++0005	59.26.5479	4.7 uF	20%, 25V + Sal		
C++0006	59.10.0335	0.33uF	10%, 63V + Petp		
C++0007	59.06.5105	1uF	10%, 50V + Petp		
O++0001	50.04.0125	1N 4448			Ph+Seu+IT+Pc+Tf
O++0002	50.19.0122	1N 4001			Ph+Seu+IT+Pc+Tf
O++0003	50.04.0125	1N 4448			
OL+0001	50.04.2129	CQV11-7			Sie
IC+0001	50.11.0108	KR2208CP	SG 2206		Fx
IC+0002	50.09.0227	5479AOP			TI
IC+0003	50.09.0101	LF 352N	TL 072CP		TI+Seu+Mot
IC+0004	50.10.0108	LM317LZ			Not+Mot
IC+0005	50.10.0108	LM317LZ			Not+Mot
J5+0001	54.01.0020	Pin (3P)	54.01.0021 Bridge (1P) see note 2		
J5+0002	54.01.0010	Pin (3P)	54.01.0021 Bridge (1P) see note 2		
P++0001	54.02.0310		2x8P+8		
P++0002	54.02.0320		2x8P+8		
P++0003	54.14.0001		16-contacts	see note 3	
P++0004	54.14.2003		26-contacts	see note 4	
P++0005	54.14.2003		26-contacts	see note 4	
R++0001	57.11.4103	10 kOhm	5%		
R++0002	57.11.4103	10 kOhm	5%		
R++0003	57.11.4331	330 Ohm	5%		
R++0004	57.11.3912	5.1 kOhm	1%		
R++0005	57.11.3904	300 kOhm	5%		
R++0006	57.11.3903	16 kOhm	1%		
R++0007	57.11.4904	560 kOhm	5%		
R++0008	57.11.4103	10 kOhm	5%		

S T U O B R (00) 85/07/99 LN VARISPEED CONTRL BOARD 1.810.762.82 PAGE 1

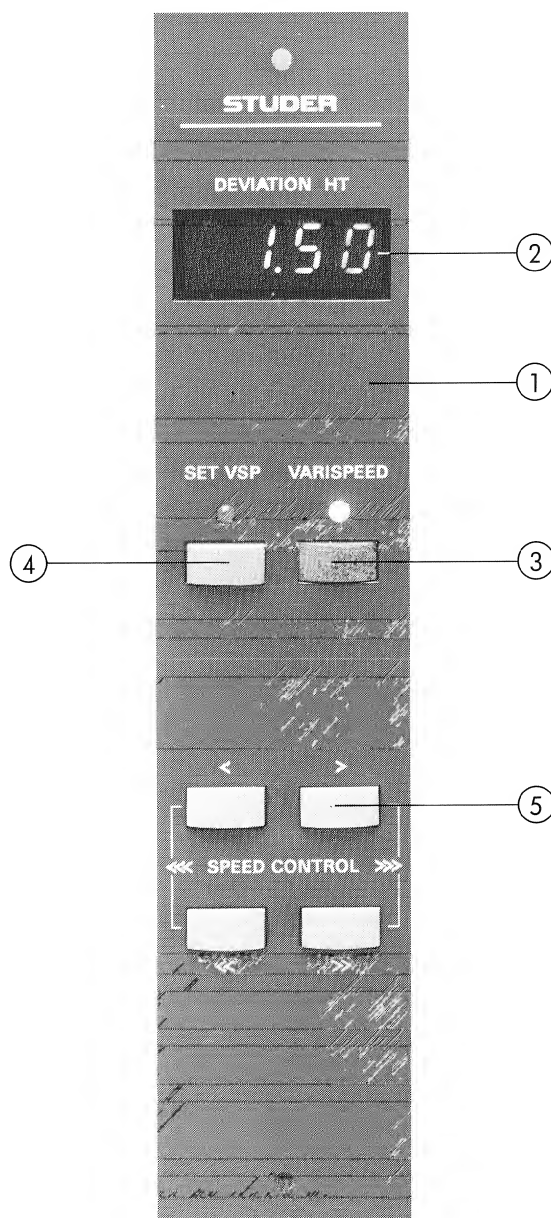
IND.	POS.Nº.	PART N°.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R++0009	57.11.4103	10 kOhm	5%		
R++0010	57.11.4122	1.2 kOhm	5%		
R++0011	57.11.4122	Not used			
R++0012	57.11.3903	56 kOhm	1%		
R++0013	57.11.3901	2.0 kOhm	1%		
R++0014	57.11.4274	270 kOhm	5%		
R++0015	57.11.4151	15 kOhm	5%		
R++0016	57.11.3622	6.2 kOhm	5%		
R++0017	58.09.0202	2 kOhm	25 turns		
R++0018	57.11.3192	1.3 kOhm	1%		
R++0019	57.11.4273	27 kOhm	5%		
R++0020	57.11.3621	820 Ohm	1%		
R++0021	57.11.3942	5.6 kOhm	1%		
R++0022	57.11.3271	270 Ohm	1%		
R++0023	57.11.3151	15 kOhm	1%		
R++0024	57.11.3271	270 Ohm	5%		
R++0025	57.11.4281	120 Ohm	5%		
R++0026	57.11.3242	2.4 kOhm	1%		
R++0027	57.11.3251	220 Ohm	1%		
R++0028	57.11.4182	1.8 kOhm	5%		
R++0029	58.09.0123	10 kOhm	10 turns		
S++0001	1.177.100-07		Switch		St

S T U O B R (00) 85/07/99 LN VARISPEED CONTRL BOARD 1.810.762.82 PAGE 2

IND.	POS.Nº.	PART N°.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1:	120F+50V:	Centralab Nr. C N 40 C 123 J			
		Siemens Nr. 8 37 953 - J - 5123 - J			
		C. 002 S 123 J S C T CA			
Note 2:	Contact pint:	Berg Nr. 75160-102-36			
		Philips Nr. 2422 025 89303			
	Bridge:	Berg Nr. 69476-001			
		AMP Nr. 141797-1			
		Philips Nr. 2422 024 89003			
Note 3:	16-contacts:	Yamaichi Nr. FAP-16-08//4			
		Burndy Nr. BPH 9 8 16 800 GS			
Note 4:	26-contacts:	Yamaichi Nr. FAP-26-08//4			
		Burndy Nr. BPH 9 8 26 800 GS			
Manufacturers: L=Exlar, F=Fairchild, G=General Instruments, I=ITTInternational, M=Motorola, N=National (Racal), S=National Semiconductor, Ph=Philips, Se=Siemens, Sie=Siemens, St=Soliton, TI=Texas Instruments, T=Telefunken, Tl=Texas Instrument					

ORIG 85/07/99
S T U O B R (00) 85/07/99 LN VARISPEED CONTRL BOARD 1.810.762.82 PAGE 3

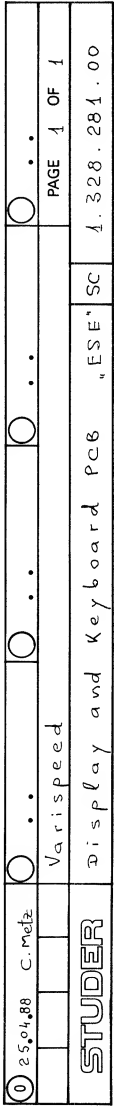
VARISPEED CONTROLLER 1.328.280



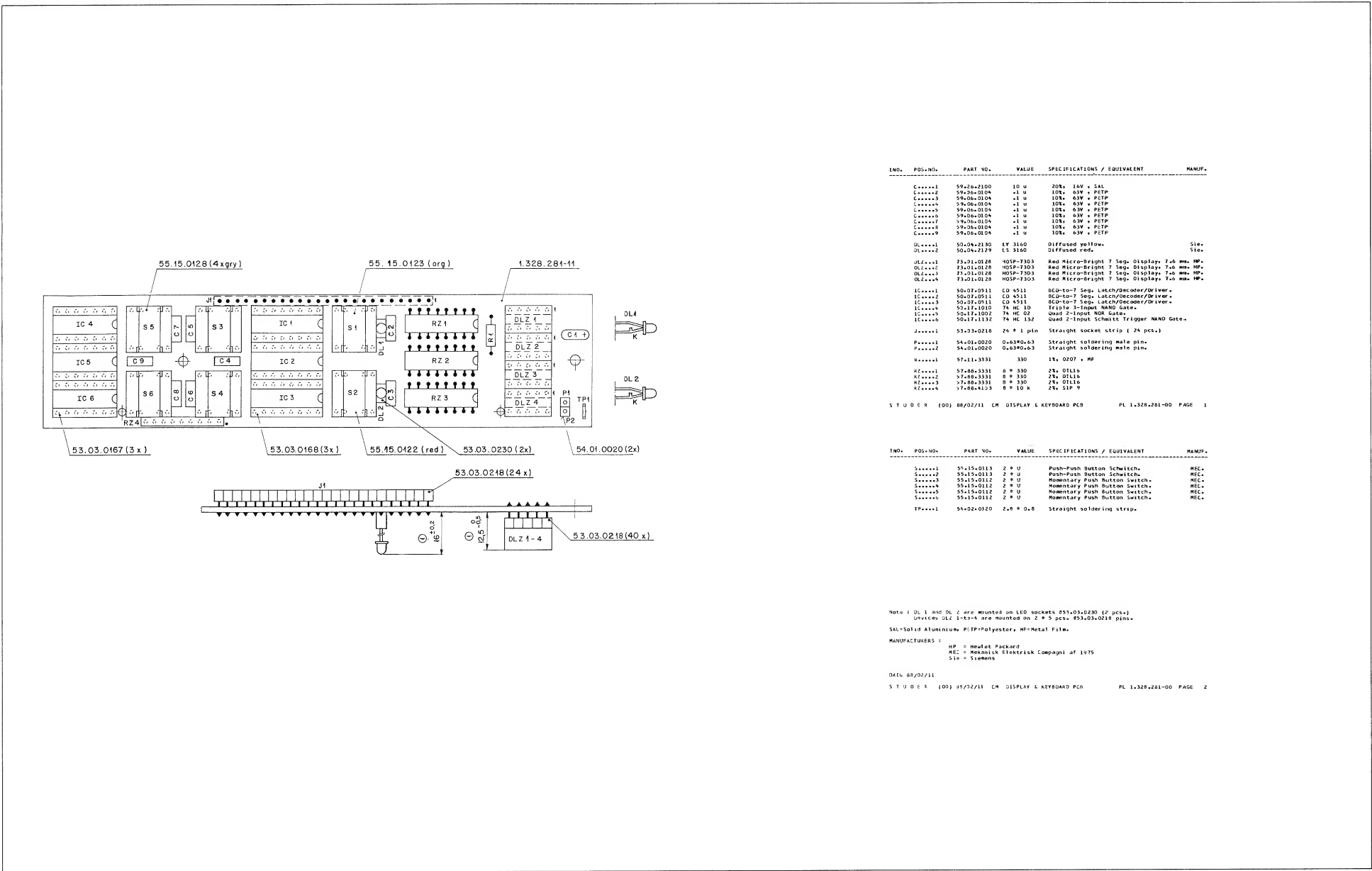
VARISPEED CONTROLLER 1.328.280

	BESTELNR.	BEZEICHNUNG
1	1.328.280.01	Frontblende
2	1.328.280.03	Blende
3	55.15.0122	Tastenkopf rot
4	55.15.0123	Tastenkopf orange
5	55.15.0128	Tastenkopf grau

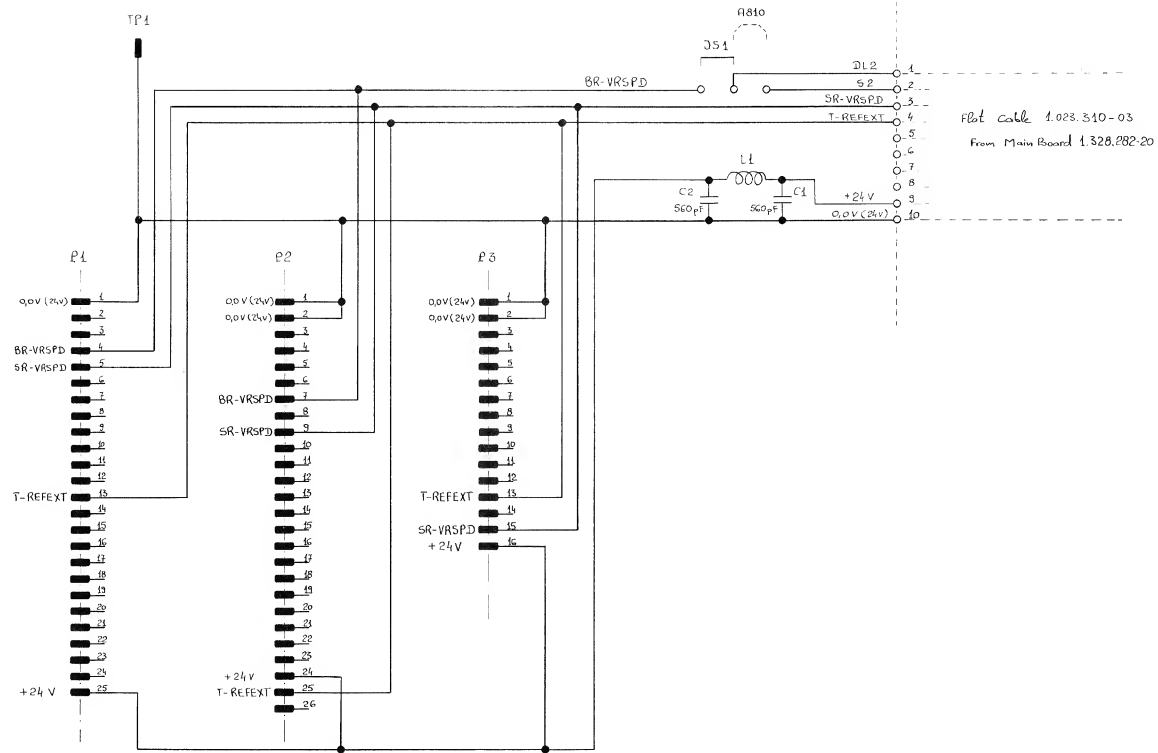
	ORDER NUMBER	PART NAME	SPECIFICATION
1	1.328.280.01	Front cover	
2	1.328.280.03	Display cover	
3	55.15.0122	Push button red	
4	55.15.0123	Push button orange	
5	55.15.0128	push button grey	



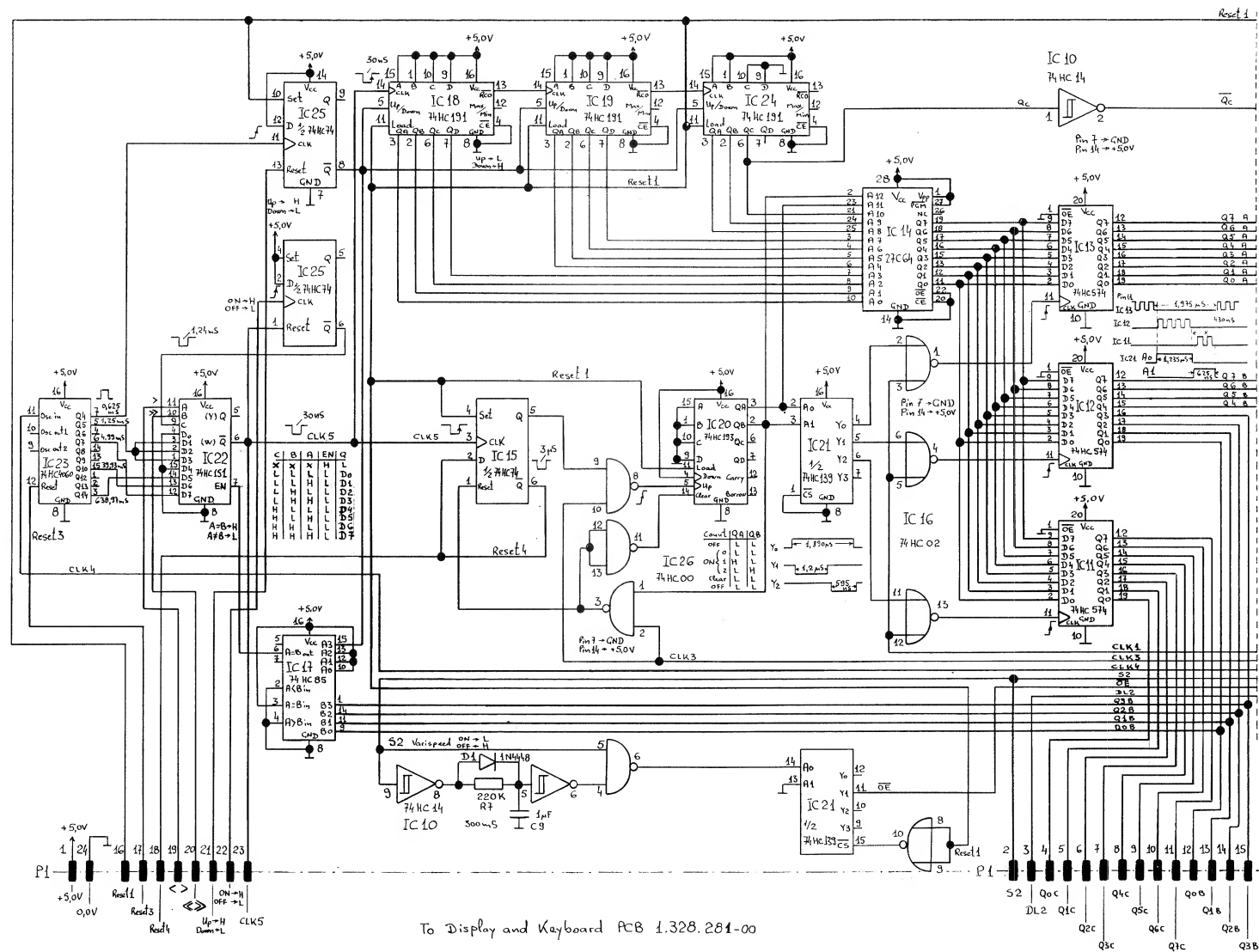
VARISPEED DISPLAY AND KEYBOARD 1.328.281.00



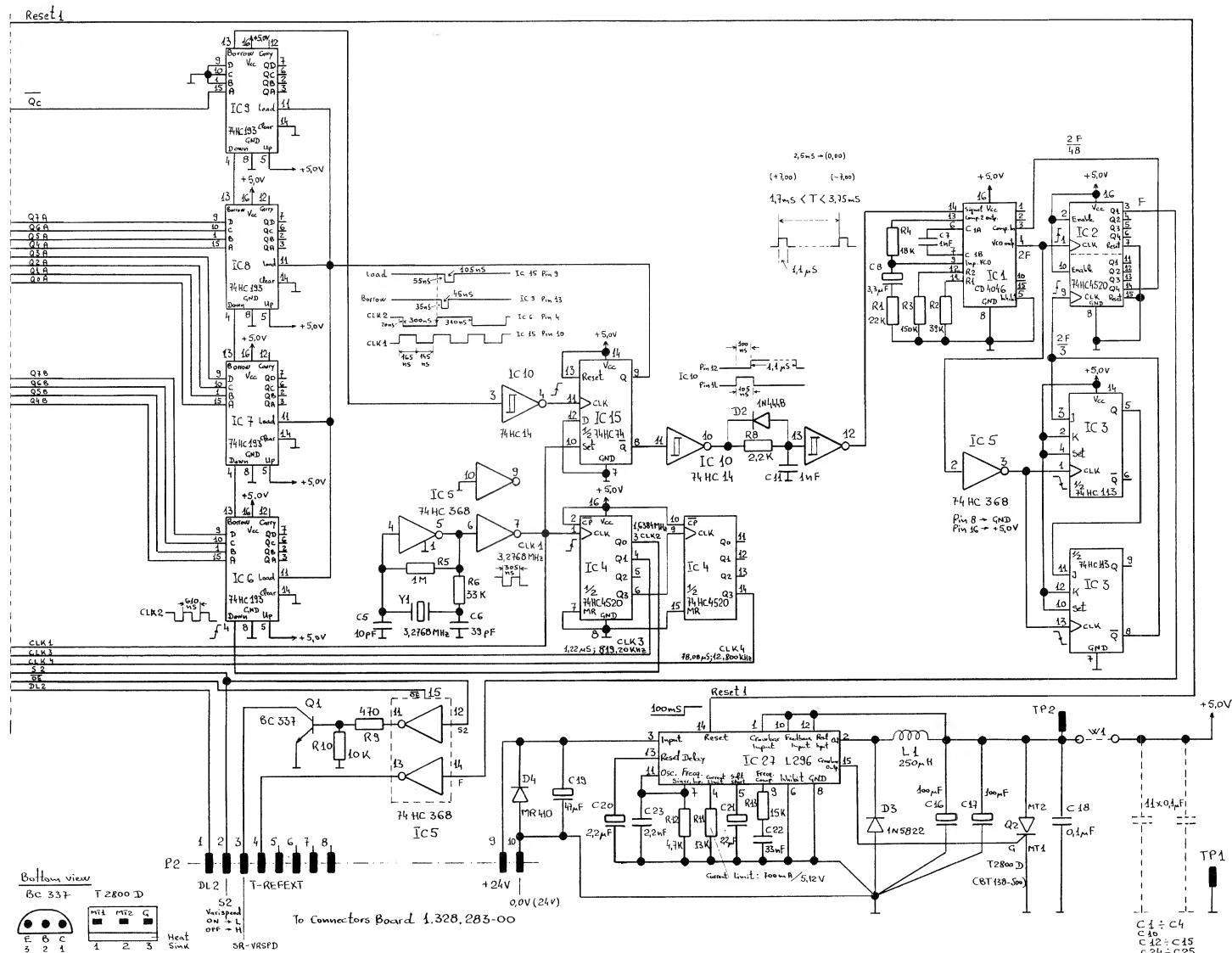
VARISPEED CONNECTORS BOARD 1.328.283.00



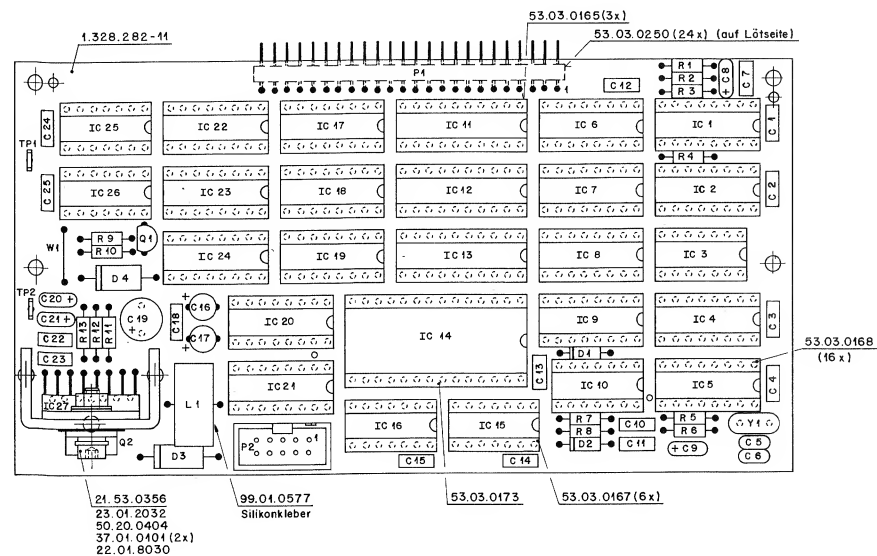
① 260188 C. P. 1/2	Varispeed	PAGE 1 OF 1
STUDER	Connectors Board	1.328.283-00



0180488 C. Melz
Varispeed			PAGE 2 OF 2		
Main Board			USE SC	1.328.282-20	



VARISPEED MAIN BOARD 1.328.282.20



INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C=	1	59-06-0104	+1 u	10T, 83W / PEPF	
C=	2	59-06-0104	+1 u	10T, 83W / PEPF	
C=	3	59-06-0104	+1 u	10T, 83W / PEPF	
C=	4	59-06-0104	+1 u	10T, 83W / PEPF	
C=	5	59-06-0104	+1 u	10T, 83W / PEPF	
C=	6	59-06-0104	+1 u	10T, 83W / PEPF	
C=	7	59-06-0104	+1 u	10T, 83W / PEPF	
C=	8	59-06-0104	+1 u	10T, 83W / PEPF	
C=	9	59-06-0104	+1 u	10T, 83W / PEPF	
C=	10	59-06-0104	+1 u	10T, 83W / PEPF	
C=	11	59-06-0104	+1 u	10T, 83W / PEPF	
C=	12	59-06-0104	+1 u	10T, 83W / PEPF	
C=	13	59-06-0104	+1 u	10T, 83W / PEPF	
C=	14	59-06-0104	+1 u	10T, 83W / PEPF	
C=	15	59-06-0104	+1 u	10T, 83W / PEPF	
C=	16	59-06-0104	+1 u	10T, 83W / PEPF	
C=	17	59-06-0104	+1 u	10T, 83W / PEPF	
C=	18	59-06-0104	+1 u	10T, 83W / PEPF	
C=	19	59-06-0104	+1 u	10T, 83W / PEPF	
C=	20	59-06-0104	+1 u	10T, 83W / PEPF	
C=	21	59-06-0104	+1 u	10T, 83W / PEPF	
C=	22	59-06-0104	+1 u	10T, 83W / PEPF	
C=	23	59-06-0104	+1 u	10T, 83W / PEPF	
C=	24	59-06-0104	+1 u	10T, 83W / PEPF	
C=	25	59-06-0104	+1 u	10T, 83W / PEPF	

0.....1	50.04.0125	1N 4448	75 V, 0.1 A, 4 ns, Si.	
0.....2	50.04.0125	1N 4448	75 V, 0.1 A, 4 ns, Si.	
0.....3	50.04.0519	1 N 5822	40 V, 3 A, Schottky.	Not.
0.....4	50.04.0521	MUR 410	100 V, 5 A, Si.	Not.

1C....1	50.07.0046	MC 14046 B	Phase-Locked Loop.	Not.
1C....2	50.17.4520	74 HC 4520	Quad 4-Bit Binary Counter.	
1C....3	50.17.1113	74 HC 1113	Quad J-K Flip-Flop with Set.	
1C....4	50.17.4520	74 HC 4520	Quad 4-Bit Binary Counter.	
1C....5	50.17.1368	74 HC 368	Hex 3-State Inv. Buff. w/ 2-Bit & 4-Bit Sect.	
1C....6	50.17.1193	74 HC 193	Presets, 4-Bit Bin. Up/down Count. with Reset	

S T U O E R (00) BB/03/05 CM MAIN BOARD PL 1.328.282-20 PAGE 1

INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
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[Comp7] 501F1193 74 HC 193
[Comp8] 501F1194 74 HC 193
[Comp9] 501F1195 74 HC 193
[Comp10] 501F1196 74 HC 193
[Comp11] 501F1197 74 HC 193
[Comp12] 501F1198 74 HC 193
[Comp13] 501F1199 74 HC 193
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[Comp63] 501F11CB 74 HC 193
[Comp64] 501F11CC 74 HC 193
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[Comp106] 501F11F6 74 HC 193
[Comp107] 501F11F7 74 HC 193
[Comp108] 501F11F8 74 HC 193
[Comp109] 501F11F9 74 HC 193
[Comp110] 501F11FA 74 HC 193
[Comp111] 501F11FB 74 HC 193
[Comp112] 501F11FC 74 HC 193
[Comp113] 501F11FD 74 HC 193
[Comp114] 501F11FE 74 HC 193
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[Comp116] 501F1200 74 HC 193
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[Comp124] 501F1208 74 HC 193
[Comp125] 501F1209 74 HC 193
[Comp126] 501F120A 74 HC 193
[Comp127] 501F120B 74 HC 193
[Comp128] 501F120C 74 HC 193
[Comp129] 501F120D 74 HC 193
[Comp130] 501F120E 74 HC 193
[Comp131] 501F120F 74 HC 193
[Comp132] 501F1210 74 HC 193
[Comp133] 501F1211 74 HC 193
[Comp134] 501F1212 74 HC 193
[Comp135] 501F1213 74 HC 193
[Comp136] 501F1214 74 HC 193
[Comp137] 501F1215 74 HC 193
[Comp138] 501F1216 74 HC 193
[Comp139] 501F1217 74 HC 193
[Comp140] 501F1218 74 HC 193
[Comp141] 501F1219 74 HC 193
[Comp142] 501F121A 74 HC 193
[Comp143] 501F121B 74 HC 193
[Comp144] 501F121C 74 HC 193
[Comp145] 501F121D 74 HC 193
[Comp146] 501F121E 74 HC 193
[Comp147] 501F121F 74 HC 193
[Comp148] 501F1220 74 HC 193
[Comp149] 501F1221 74 HC 193
[Comp150] 501F1222 74 HC 193
[Comp151] 501F1223 74 HC 193
[Comp152] 501F1224 74 HC 193
[Comp153] 501F1225 74 HC 193
[Comp154] 501F1226 74 HC 193
[Comp155] 501F1227 74 HC 193
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[Comp157] 501F1229 74 HC 193
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[Comp161] 501F122D 74 HC 193
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[Comp164] 501F1230 74 HC 193
[Comp165] 501F1231 74 HC 193
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[Comp168] 501F1234 74 HC 193
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[Comp170] 501F1236 74 HC 193
[Comp171] 501F1237 74 HC 193
[Comp172] 501F1238 74 HC 193
[Comp173] 501F1239 74 HC 193
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[Comp176] 501F123C 74 HC 193
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[Comp178] 501F123E 74 HC 193
[Comp179] 501F123F 74 HC 193
[Comp180] 501F1240 74 HC 193
[Comp181] 501F1241 74 HC 193
[Comp182] 501F1242 74 HC 193
[
```

L.....1	62.03.0005	250 uH	1 A: Toroidal Choke.	St.
P.....1	53.03.0250	24 # 1 pin	Right Angle Male Contact Strip. (24 pcs=)	
P.....2	54.14.2001	2 # 5 pins	Straight Print Male Connector.	

Q.....1	50.03.0343	9C 337-25	45 V, 0.8 A, Si. NPN.	RCA.
Q.....2	50.99.0106	T 2800 0	400 V, 8 A, Triac.	
R.....1	57.11.3223	22 k	1%, 0207, ± MF	

R.....1	57.11.3393	39 k	1%	0207	MF
R.....2	57.11.3154	150 k	1%	0207	MF
R.....3	57.11.3183	18 k	1%	0207	MF
R.....4	57.11.3105	1 M	1%	0207	MF
R.....5	57.11.3333	33 k	1%	0207	MF
R.....6	57.11.3224	220 k	1%	0207	MF

S T U D E R (00) 88/03/08 CM MAIN BOARD PL 1.328.2B2-20 PAGE 2

INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
------	---------	----------	-------	-----------------------------	--------

R.....8	57.11.3222	2-2 k	1x	0207	* MF
R.....9	57.11.3471	470	1x	0207	* MF
R.....10	57.11.3103	10 k	1x	0207	* MF
R.....11	57.11.3133	13 k	1x	0207	* MF
R.....12	57.11.3472	4.7 k	1x	0207	* MF

R.....1	57.11.3153	15 k	1%, 0207 + 4%
TP....1	54.02.0320	2,0 ± 0,08	Straight Soldering Strip.
TP....2	54.02.0320	2,0 ± 0,08	Straight Soldering Strip.
W.....1	1.010.32464	4,3 ± 10 ± 2	Bridge.

Y===== 89.01.0376 3.2768 MHZ HC 18 U Ceramic Resonator.

CER=Ceramic, EL=Electrolytic, PETP=Polyester, SAL=Solid Aluminum,
MF=Metal Film.

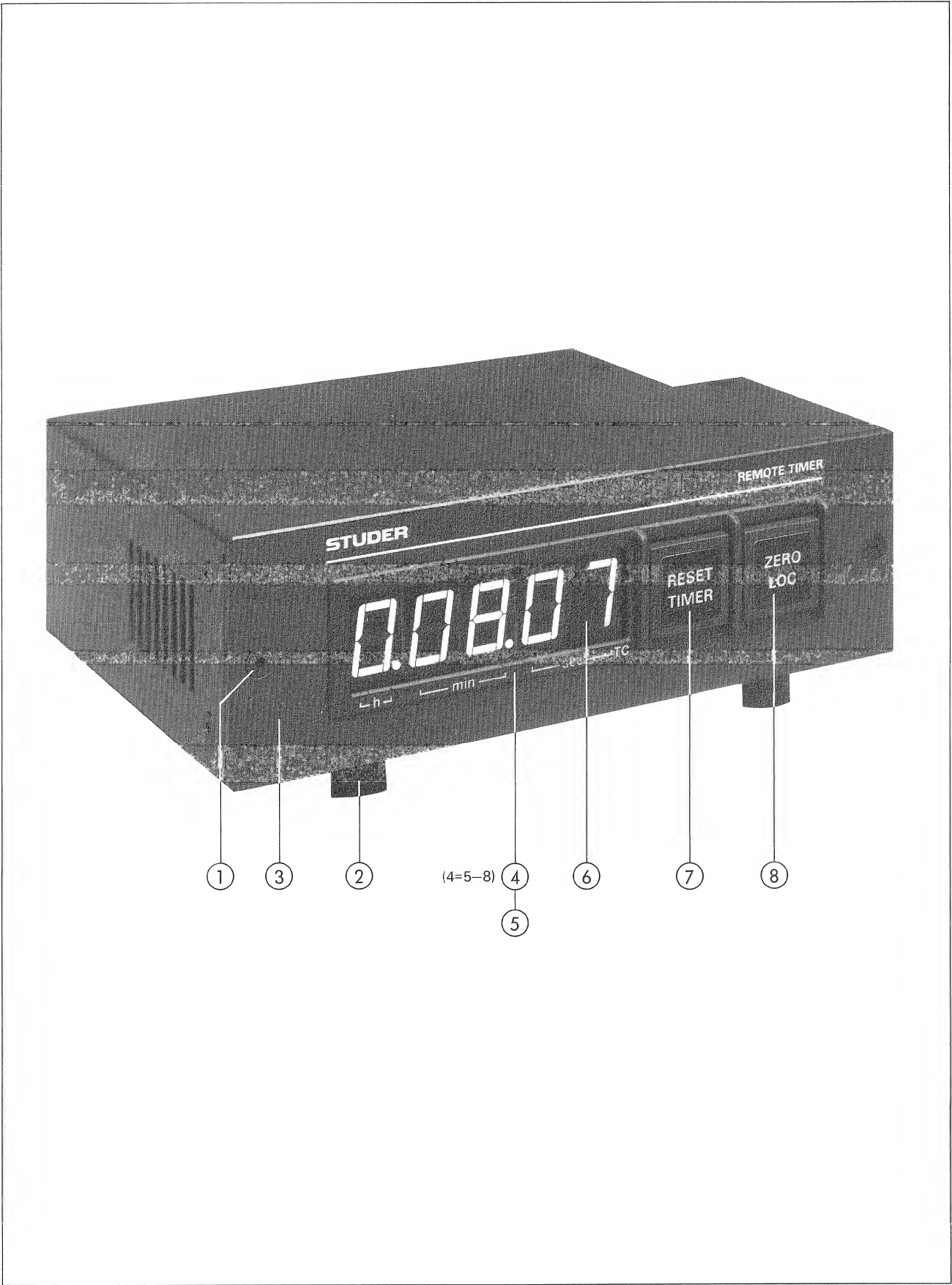
MANUFACTURERS =

Mo	=	Motorola
RCA	=	RCA Corp
SGS	=	SGS Mic
St	=	Studer

ORIG 88/03/08

S T U D E R (00) 88/03/08 CM MAIN BOARD PL 1.328.282-20 PAGE 3

REMOTE TIMER (SERIAL) 1.328.275



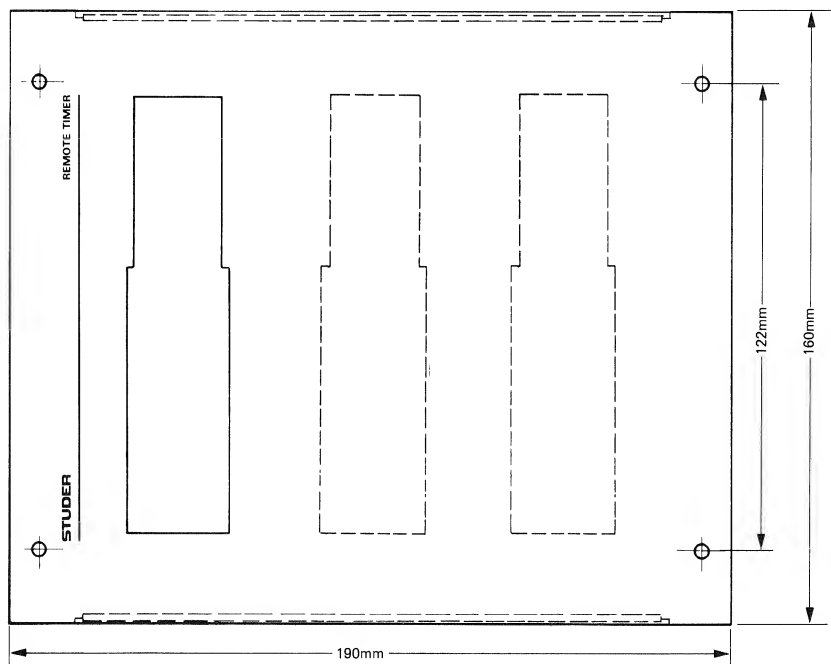
REMOTE TIMER (SERIAL) 1.328.275

	BESTELNR.	BEZEICHNUNG	SPEZIFIKATION
1	1.010.045.21 21.51.2354	Schraube schwarz Schraube Ni	M3x6 M3x6
2	31.02.0211	Fuss schwarz	D16x6,5
3	1.328.275.01	Frontplatte	
4	1.810.253.00	Display-Gehäuse komplett	
5	1.810.303.01	Display-Gehäuse	
6	1.810.303.02	Filterglas	
7	1.011.210.14 1.011.210.01	Schild RESET TIMER Taste	
8	1.011.210.15 1.011.210.01	Schild ZERO LOC Taste	

	ORDER NUMBER	PART NAME	SPECIFICATION
1	1.010.045.21 21.51.2354	Screw black Screw Ni	M3x6 M3x5
2	31.02.0211	Foot black	D16x6,5
3	1.328.275.01	Front cover	
4	1.810.253.00	Display cover compl.	
5	1.810.303.01	Display cover	
6	1.810.303.02	Display window	
7	1.011.210.14 1.011.210.01	Label ZERO TIMER Push button	
8	1.011.210.15 1.011.210.01	Label ZERO LOC Push button	

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ACCESSORIES

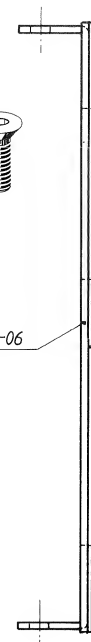


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1.328.275-06

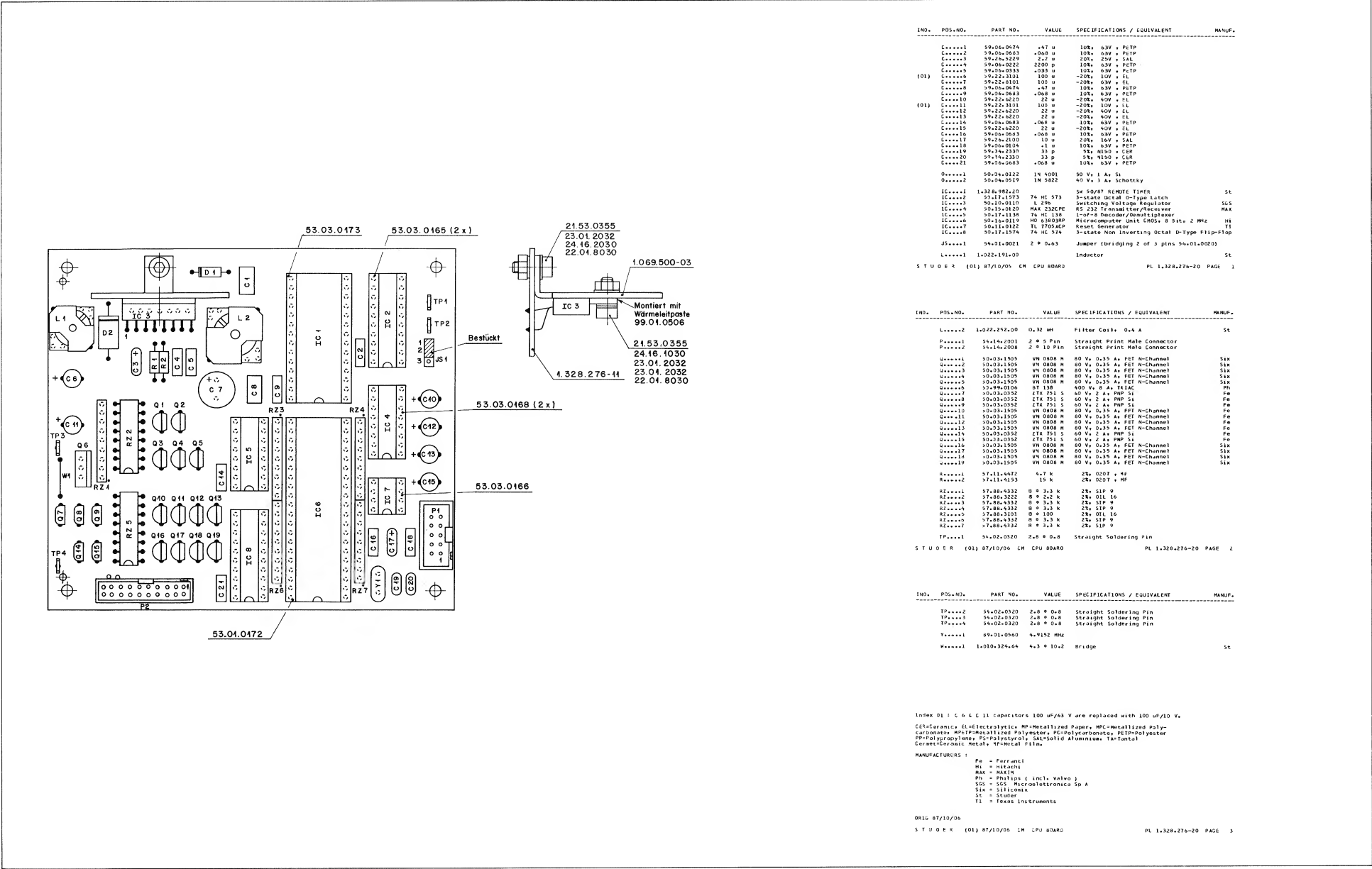
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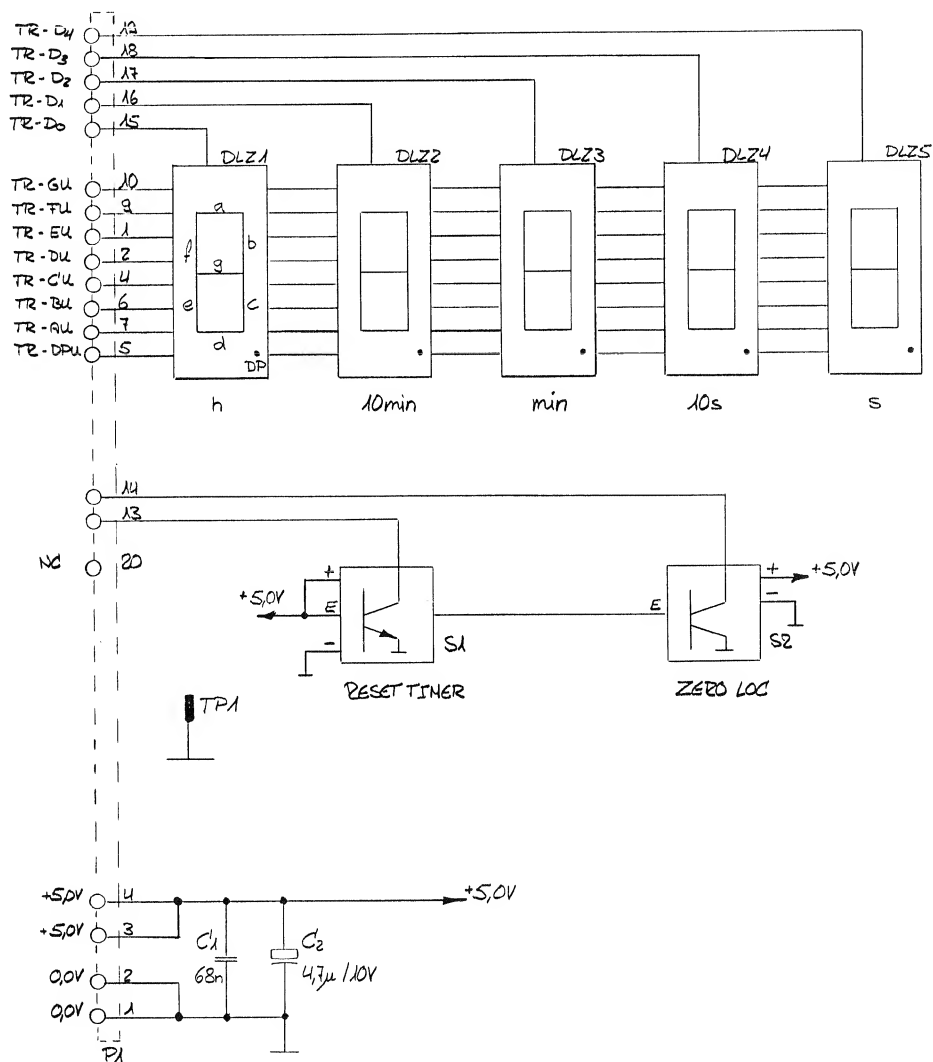
	BESTELNR.	BEZEICHNUNG
9	1.328.275.31	Befestigungsblende für 1 Zähler
10	1.328.275.32	Befestigungsblende für 2 Zähler
11	1.328.275.33	Befestigungsblende für 3 Zähler

	ORDER NUMBER	PART NAME	SPECIFICATION
9	1.328.275.31	Mounting frame for 1 counter	
10	1.328.275.32	Mounting frame for 2 counter	
11	1.328.275.33	Mounting frame for 3 counter	

CPU BOARD 1.328.276.00

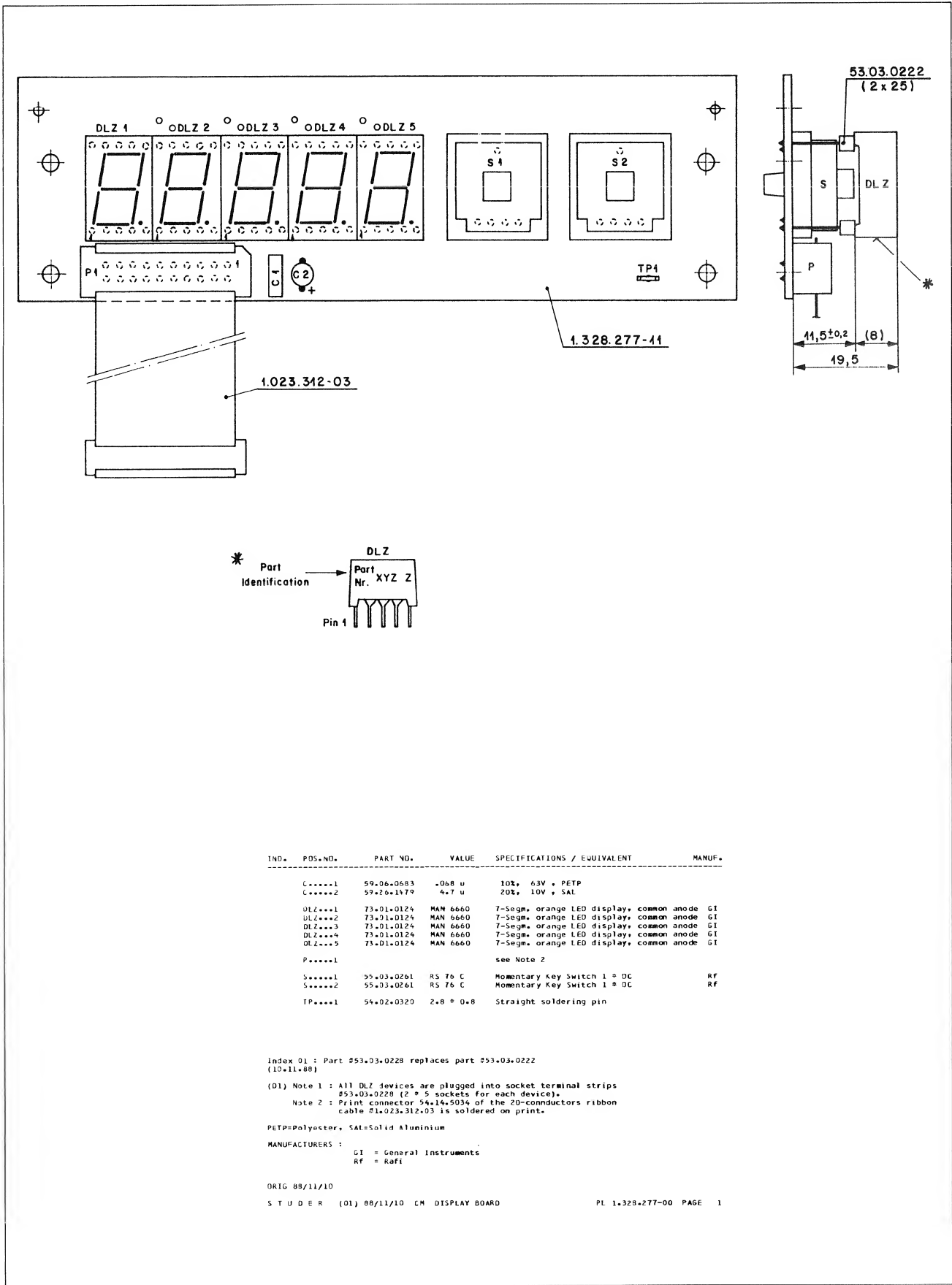


DISPLAY BOARD 1.328.277.00



① 10.04.87	Bec	...	...	...	...
					PAGE 1 OF 1
STUDER	DISPLAY BOARD				1.328.277-00

DISPLAY BOARD 1.328.277.00



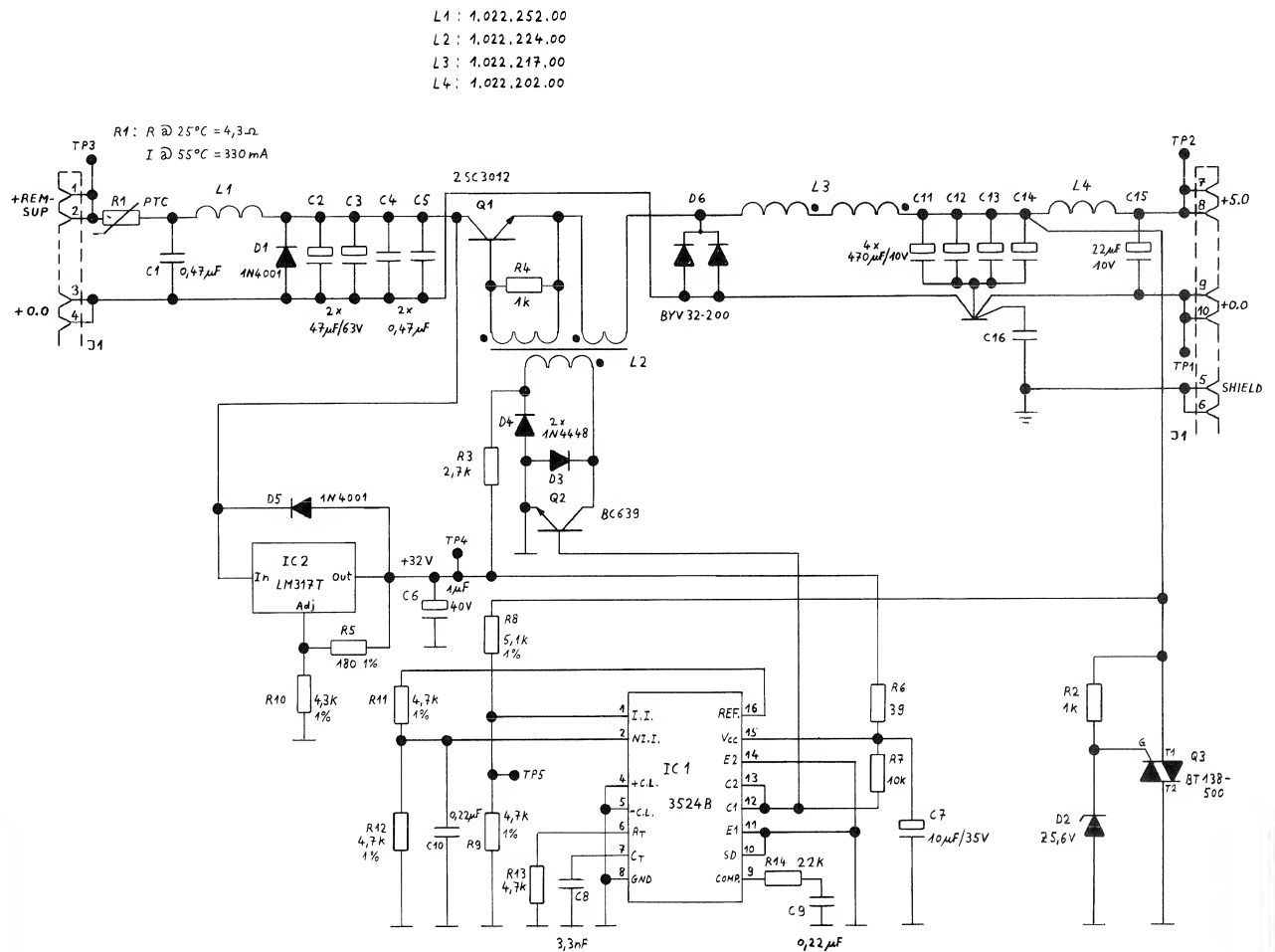
REMOTE TIMER/LAP MODE DISPLAY (SERIAL) 1.328.270



REMOTE TIMER/LAP MODE DISPLAY (SERIAL) 1.328.270

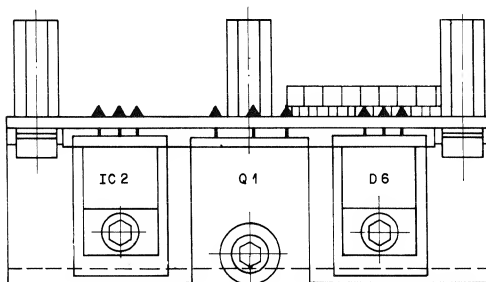
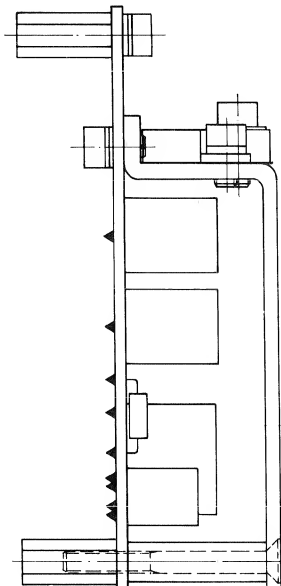
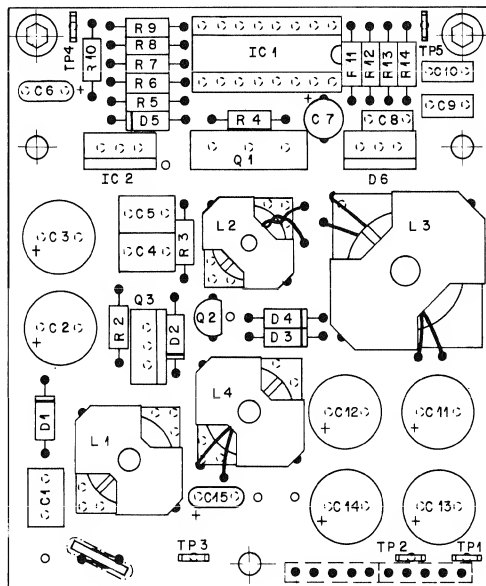
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.270.00	Remote timer/lap mode display (self-adhesive labels: Section 8.23)	
	1	1.328.213.00	STABILIZER PCB	
	3	21.53.0354	Allen screw	M3x6
	3	23.01.1032	Washer	
	3	24.16.1030	Fin washer	
	1	1.328.271.00	TIMER DISPLAY PCB	
	1	1.328.270.14	Insulation	
	2	21.53.0354	Allen screw	M3x6
	2	23.01.1032	Washer	
	2	24.16.1030	Fin washer	
	1	1.328.272.00	TIMER DRIVER PCB	
	4	21.53.0354	Allen screw	M3x6
	3	23.01.1032	Washer	
	3	24.16.1030	Fin washer	
	1	24.16.2030	Serrated lock washer	
01	2	1.010.025.21	Round head allen screw	M3x6
02	1	1.328.270.02	Push button housing	
	1	1.810.300.05	Damping strip	
03	2	1.011.210.01	Push button	
	2	1.010.202.37	Pressure spring	
04	1	1.328.270.01	Front cover	
	4	1.010.034.21	Countersunk allen head screw	
05	1	1.328.274.00	Housing	upper
	6	1.010.045.21	Countersunk allen head screw	
06	1	1.328.273.00	Bottom cover	
	4	31.02.0211	Foot	
07	1	1.820.232.02	Filter screen red	

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
-STABILIZER PCB 1.328.213.00



05.02.85	CHE						
A820/A812				PAGE 1 OF 1			
STUDER		STABILIZER BOARD				SC	1.328.213.00

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00 —STABILIZER PCB 1.328.213.00



INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R....01	57.92.1331	PTC	see note 2		Ph
R....02	57.11.4102	1	kOhm	2%	
R....03	57.11.4272	2.7	kOhm	2%	
R....04	57.11.4102	1	kOhm	2%	
R....05	57.11.3181	180	Ohm	1%	
R....06	57.11.4390	39	Ohm	2%	
R....07	57.11.4103	10	kOhm	2%	
R....08	57.11.3512	5.1	kOhm	1%	
R....09	57.11.3472	4.7	kOhm	1%	
R....10	57.11.3432	4.3	kOhm	1%	
R....11	57.11.3472	4.7	kOhm	1%	
R....12	57.11.3472	4.7	kOhm	1%	
R....13	57.11.4472	4.7	kOhm	2%	
R....14	57.11.4223	22	kOhm	2%	
P....01	54.02.0320	Test Point			
P....02	54.02.0320	Test Point			
P....03	54.02.0320	Test Point			
P....04	54.02.0320	Test Point			
P....05	54.02.0320	Test Point			

S T U O E R (P) 85/02/05 SU STABILIZER 80AR0 1.328.213-00 PAGE 2

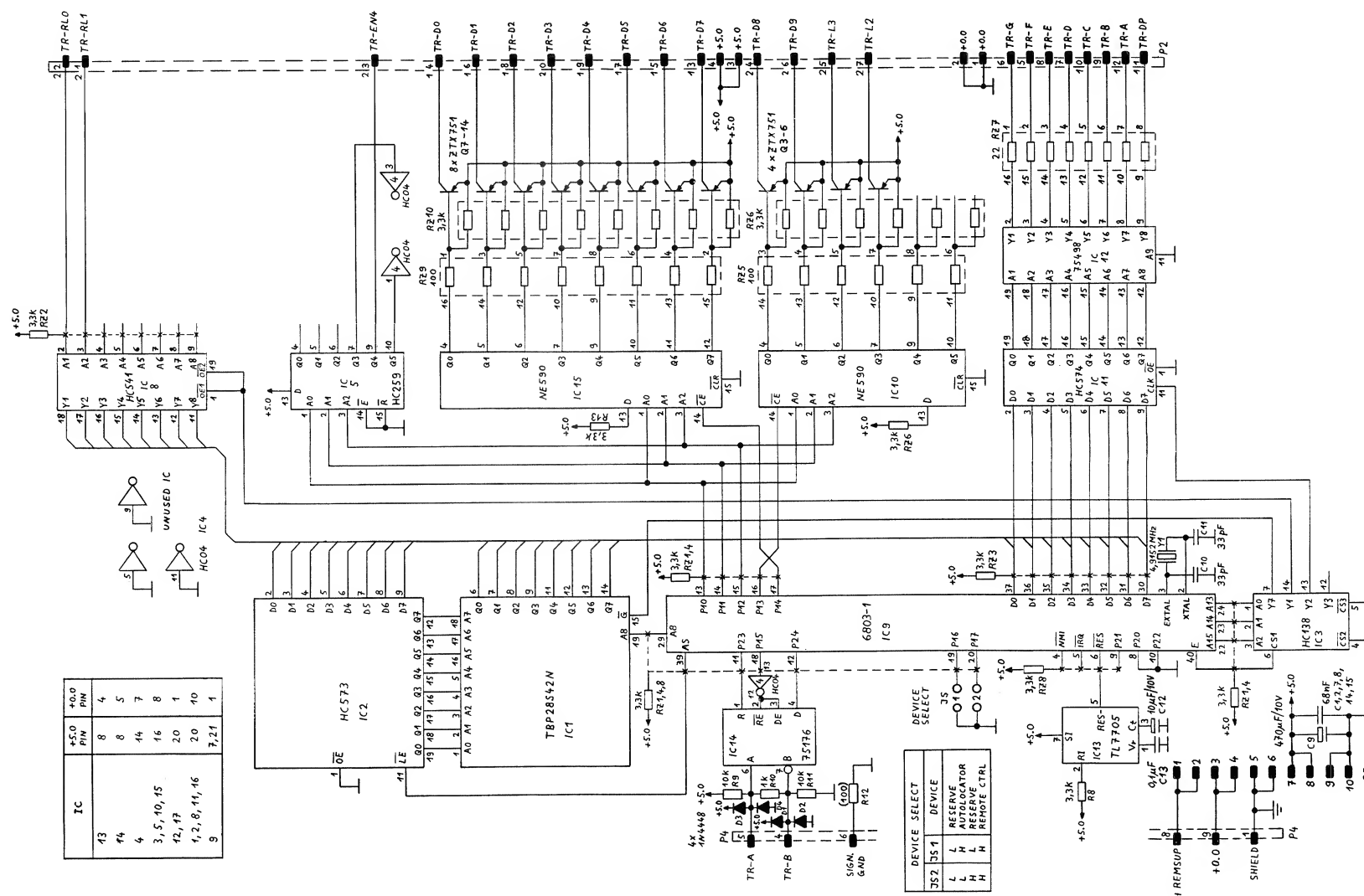
INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C....01	59.06.0474	0.47 uF	10%	PETP	
C....02	59.22.8470	47 uF	20%, 63V	EL	
C....03	59.22.8470	47 uF	20%, 63V	EL	
C....04	59.06.0474	0.47 uF	10%	PETP	
C....05	59.06.0474	0.47 uF	10%	PETP	
C....06	59.26.9109	1 uF	20%, 40V	SAL	
C....07	59.22.6100	10 uF	-20%, 35V	EL	
C....08	59.06.0332	3300 pF	10%	PETP	
C....09	59.06.0224	0.22 uF	10%	PETP	
C....10	59.06.0224	0.22 uF	10%	PETP	
C....11	59.22.3471	470 uF	-20%, 10V	EL	
C....12	59.22.3471	470 uF	-20%, 10V	EL	
C....13	59.22.3471	470 uF	-20%, 10V	EL	
C....14	59.22.3471	470 uF	-20%, 10V	EL	
C....15	59.26.1220	22 uF	20%, 10V	SAL	
D....01	50.04.0122	1N 4001		Mot	
D....02	50.04.0108	5.6 V	82X83 C 5V6, 82X55 C 5V6, ZPO 5.6	Ses,ITT	
D....03	50.04.0125	1N 4448		Fc,ITT,Ph,Ses	
D....04	50.04.0125	1N 4448		Fc,ITT,Ph,Ses	
D....05	50.04.0122	1N 4001		Mot	
D....06	50.04.0517	8YV32-200		Mot,Ph	
IC....01	50.05.0279	SG 35248N		SG	
IC....02	50.10.0104	LM 317T	LM 317 SP	Tho,Mot,NS,TI	
J....01			see note 1		
L....01	1.022.252.00	0.32 mH	Filter Coil	St	
L....02	1.022.224.00		Power Supply Transformer	St	
L....03	1.022.217.00	46 uH	HF-Coil, 5A	St	
L....04	1.022.202.00	16.9 mH	Filter Coil	St	
Q....01	50.03.0517	2 SC 3012	NPN	NEC	
Q....02	50.03.0551	BC 639	NPN	Mot,Ph	
Q....03	50.99.0106	T 2800	400V, 8A, Triac	Ph	

INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
EL=Electrolytic, SAL=Solid Aluminium, PETP=Polyester					
MANUFACTURERS: Fc=Fairchild, ITT=Intermetall, Mot=Motorola, Nf=Nippon Electric Corp., NS=National Semiconductors, Ph=Philips, Ses=Sesocosem, SG=Silicon General, St=Studer, Tho=Thomson, TI=Texas Instruments					
note 1 - Connector: 2 pieces Studer Nr.53030202					
note 2 - PTC Thermistor: R @ 25 degree Celsius = 4.7 Ohm I @ 55 degree Celsius = 330 mA Philips Nr.2322 663 13311					

ORIG 85/02/05

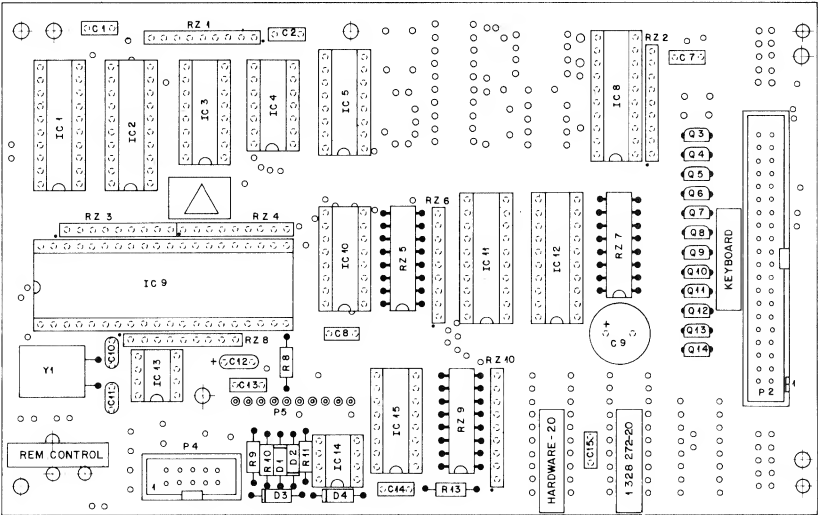
S T U O E R (P) 85/02/05 SU STABILIZER 80AR0 1.328.213-00 PAGE 1 S T U O E R (P) 85/02/05 SU STABILIZER 80AR0 1.328.213-00 PAGE 3

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
-TIMER DRIVER PCB 1.328.272.20



DEVICE SELECT		
JS2	JS1	DEVICE
L	L	RESERVE
L	H	AUTOLOCATOR
H	L	RESERVE
H	H	REMOTE (TRI)

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
-TIMER DRIVER PCB 1.328.272.20



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C*****1	59.06.0683	68 nF	10%, 63V, PETP		
C*****2	59.06.0683	68 nF	10%, 63V, PETP		
C*****7	59.06.0683	68 nF	10%, 63V, PETP		
C*****8	59.06.0683	68 nF	10%, 63V, PETP		
C*****9	59.22.1971	470 uF	-20%, 10V, EI		
C*****10	59.14.2310	33 pF	5%, N150, Cor		
C*****11	59.14.2310	33 pF	5%, N150, Cor		
C*****12	59.26.1100	10 uF	20%, 10V, Sol		
C*****13	59.06.0104	100 nF	10%, 63V, PETP		
C*****14	59.06.0683	68 nF	10%, 63V, PETP		
C*****15	59.06.0683	68 nF	10%, 63V, PETP		
Q*****1	50.04.0125	IN 444B		Fc=ITT+PhsSus+Tf	
Q*****2	50.04.0125	IN 444B		Fc=ITT+PhsSus+Tf	
Q*****3	50.04.0125	IN 444B		Fc=ITT+PhsSus+Tf	
Q*****4	50.04.0125	IN 444B		Fc=ITT+PhsSus+Tf	
IC*****1	1.328.999.20		Software 13/89		
IC*****2	50.17.1573	74 HC 573	-- 74 HC 573 *	Mot+NS+PhsRCA+SCS+Ti>To	SC
IC*****3	50.17.1318	74 HC 130	-- 74 HC 130 *	Mot+NS+PhsRCA+SCS+Ti>To	TI
IC*****4	50.17.1304	74 HC 130	-- 74 HC 130 *	Mot+NS+PhsRCA+SCS+Ti>To	TI
IC*****5	50.17.1299	74 HC 259	-- 74 HC 259 *	Mot+NS+PhsRCA+SCS+Ti>To	TI
IC*****8	50.17.1941	74 HC 941	-- 74 HC 941 *	Mot+NS+PhsRCA+SCS+Ti>To	TI
IC*****9	50.16.0107	HC 6803P-1	HO 6803P-1		Hi+Mot
IC*****10	50.15.0102	NE 950 N			Siq
IC*****11	50.17.1574	74 HC 574	-- 74 HC 574 *	Mot+NS+PhsRCA+SCS+Ti>To	TI
IC*****12	50.15.0113	SN 75170B N			TI
IC*****13	50.11.0122	TL7705ACP			TI
IC*****14	50.15.0115	SN 75170B N	DS 3695 N		NS+TI
IC*****15	50.15.0102	NE 950 N			Siq
P*****2			see note 3		
P*****4			see note 2		
P*****5			see note 4		
Q*****3	50.03.0352	ZTX 751 S			Fe
Q*****4	50.03.0352	ZTX 751 S			Fe

STUDER (20) 85/04/23 SU TIMER DRIVER BOARD 1.328.272.00 PAGE 1

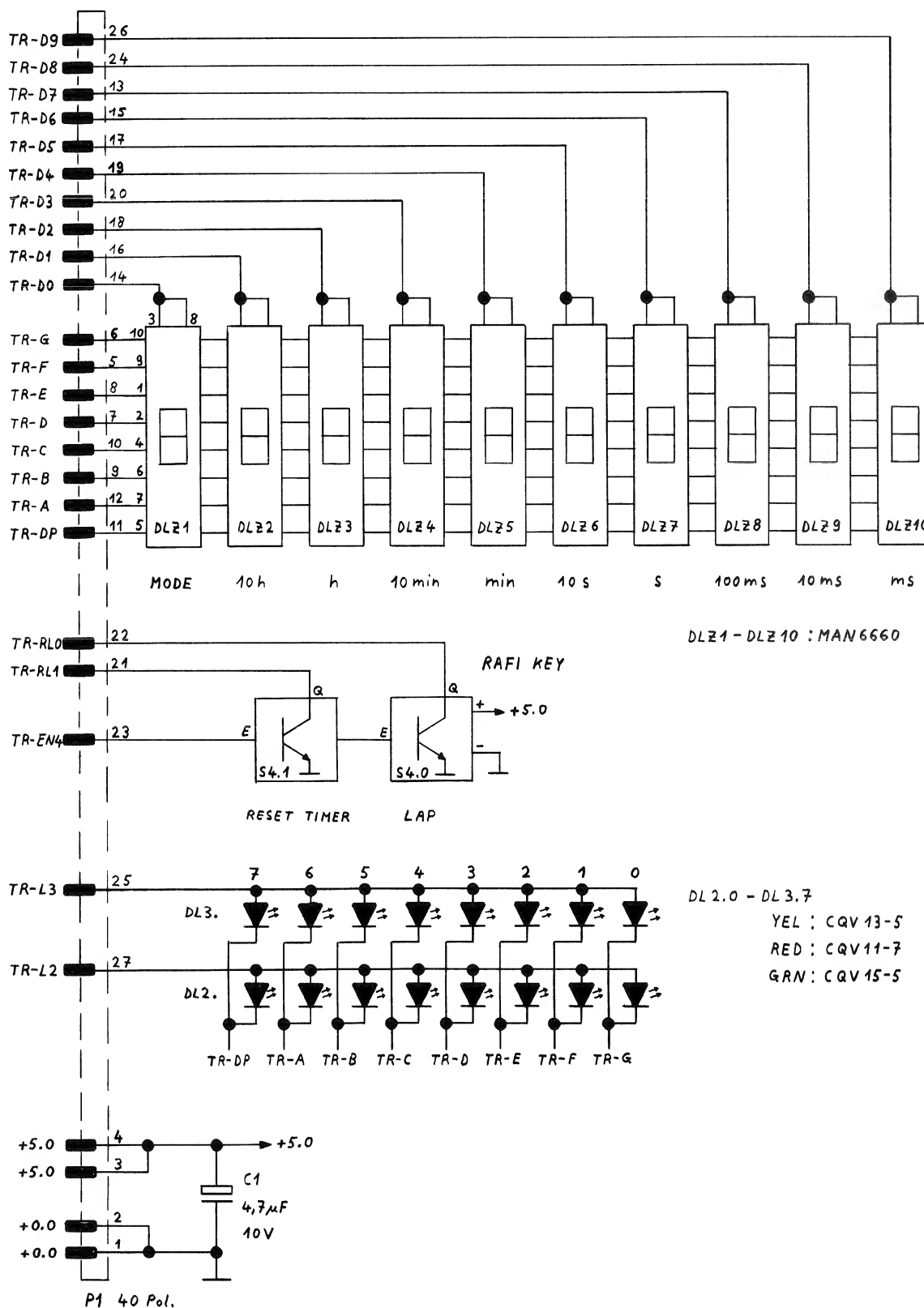
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Q*****5	50.03.0352	ZTX 751 S			Fe
Q*****6	50.03.0352	ZTX 751 S			Fe
Q*****7	50.03.0352	ZTX 751 S			Fe
Q*****8	50.03.0352	ZTX 751 S			Fe
Q*****9	50.03.0352	ZTX 751 S			Fe
Q*****10	50.03.0352	ZTX 751 S			Fe
Q*****11	50.03.0352	ZTX 751 S			Fe
Q*****12	50.03.0352	ZTX 751 S			Fe
Q*****13	50.03.0352	ZTX 751 S			Fe
Q*****14	50.03.0352	ZTX 751 S			Fe
R*****8	57.11.4332	3+3 kOhm	2%		
R*****9	57.11.4332	10 kOhm	2%		
R*****10	57.11.4332	1 kOhm	2%		
R*****11	57.11.4332	10 kOhm	2%		
R*****12		not used			
R*****13	57.11.4332	3+3 kOhm	2%		
RZ*****1	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
RZ*****2	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
RZ*****3	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
RZ*****4	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
RZ*****5	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
RZ*****6	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
RZ*****7	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
RZ*****8	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
RZ*****9	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
RZ*****10	57.88.4332	Networks 8 0 3+3 kOhm, 2% single line			
Y*****1	89.01.0560	4.9152 MHz +/-100 ppm, Nymph Nr. TO 18/ANP 049			

STUDER (20) 85/04/23 SU TIMER DRIVER BOARD 1.328.272.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 2 - Connector: 10 Contacts		Studer Nr.	56-14-2001		
		Yanachi Nr.	FAP-10-08/74		
		Burndy Nr.	8PH 7 8 10 800 GS		
Note 3 - Connector: 40 Contacts		Studer Nr.	56-14-2004		
		Yanachi Nr.	FAP-40-08/74		
		Burndy Nr.	8PH 8 8 40 800 GS		
Note 4 - Connector: 10 Pieces		Studer Nr.	1-010-018.54		
Cer-Ceramic: Ct=Electrolytic PETP=Polyester Film, Sol=Solid Aluminum					
MANUFACTURERS: Fc=Fairchild; Fe=Ferranti; Hi=Hitachi; Is=Intersil; ITT=Intertec; Mot=Motorola; NS=National Semiconductors; Ph=Philips; RCA=RCA Corporation; SCS=Siemens; SC=SGS/Atel; Sig=Signetics; St=Studer; T=Telefunken; TI=Texas Instruments; Ton= Toshiba					

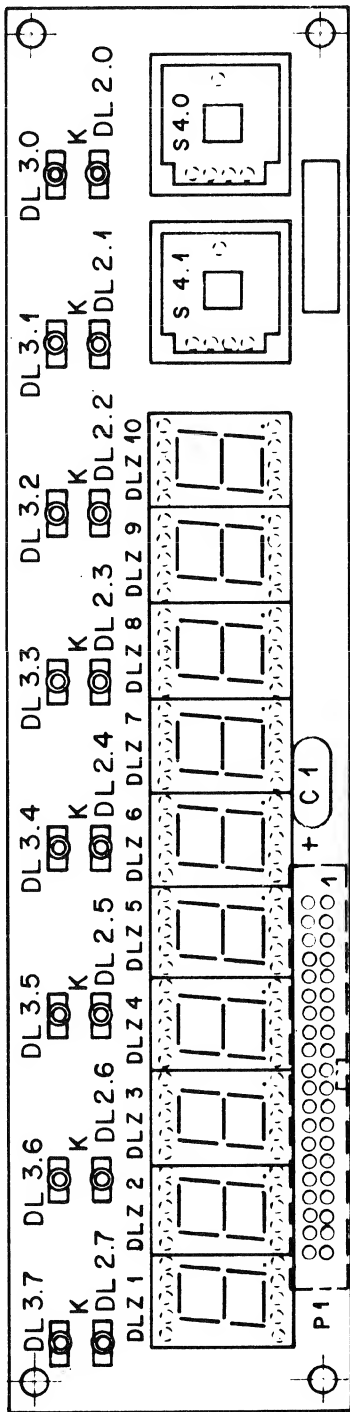
ORIG 85/04/23
STUDER (20) 85/04/23 SU TIMER DRIVER BOARD 1.328.272.00 PAGE 3

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
 -TIMER DISPLAY PCB 1.328.271.00



1.10.84 CHE	A820 / A812		
STUDER	TIMER DISPLAY BOARD	SC 1.328.271.00	PAGE 1 OF 1

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
-TIMER DISPLAY PCB 1.328.271.00



IND.	PDS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59-26-1479	4-7uF	-20%, 10V, Sal		Ph,Ri
DL...2.0	50-04-2130	LY 3160-GK	Yellow		Sie
DL...2.1	50-04-2130	LY 3160-GK	Yellow		Sie
DL...2.2	50-04-2130	LY 3160-GK	Yellow		Sie
DL...2.3	50-04-2131	LG 3160-GK	Green		Sie
DL...2.4	50-04-2131	LG 3160-GK	Green		Sie
DL...2.5	50-04-2131	LY 3160-GK	Yellow		Sie
DL...2.6	50-04-2131	LY 3160-GK	Yellow		Sie
DL...2.7	50-04-2131	LY 3160-GK	Yellow		Sie
DL...3.0	50-04-2130	LY 3160-GK	Yellow		Sie
DL...3.1	50-04-2130	LY 3160-GK	Yellow		Sie
DL...3.2	50-04-2130	LY 3160-GK	Yellow		Sie
DL...3.3	50-04-2130	LY 3160-GK	Yellow		Sie
DL...3.4	50-04-2130	LY 3160-GK	Yellow		Sie
DL...3.5	50-04-2130	LY 3160-GK	Yellow		Sie
DL...3.6	50-04-2130	LY 3160-GK	Yellow		Sie
DL...3.7	50-04-2130	LY 3160-GK	Yellow		Sie
DLZ...1	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
DLZ...2	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
DLZ...3	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
DLZ...4	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
DLZ...5	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
DLZ...6	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
DLZ...7	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
DLZ...8	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
DLZ...9	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
DLZ...10	73-01-0124	MAN 6660	7-Segments, Red, Brightness "G"		GI
S...4.0	55-03-0261	TTL-switch	1 = 0C, Rafi Nr. 3.13001.110		
S...4.1	55-03-0261	TTL-switch	1 = 0C, Rafi Nr. 3.13001.110		
P.....1	54-14-2004	40 cont.	see note 1		

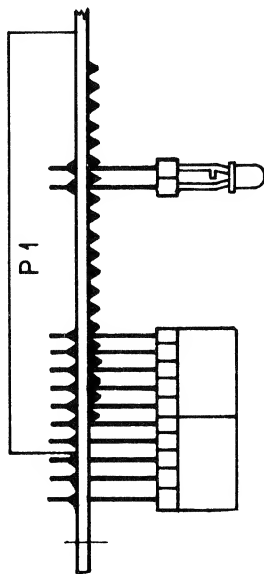
Note 1 - Connector: Yamaichi Nr. FAP-40-08-40SS
Burndy Nr. BPH 9 B 40 B00 GS

Sal=Solid Aluminium

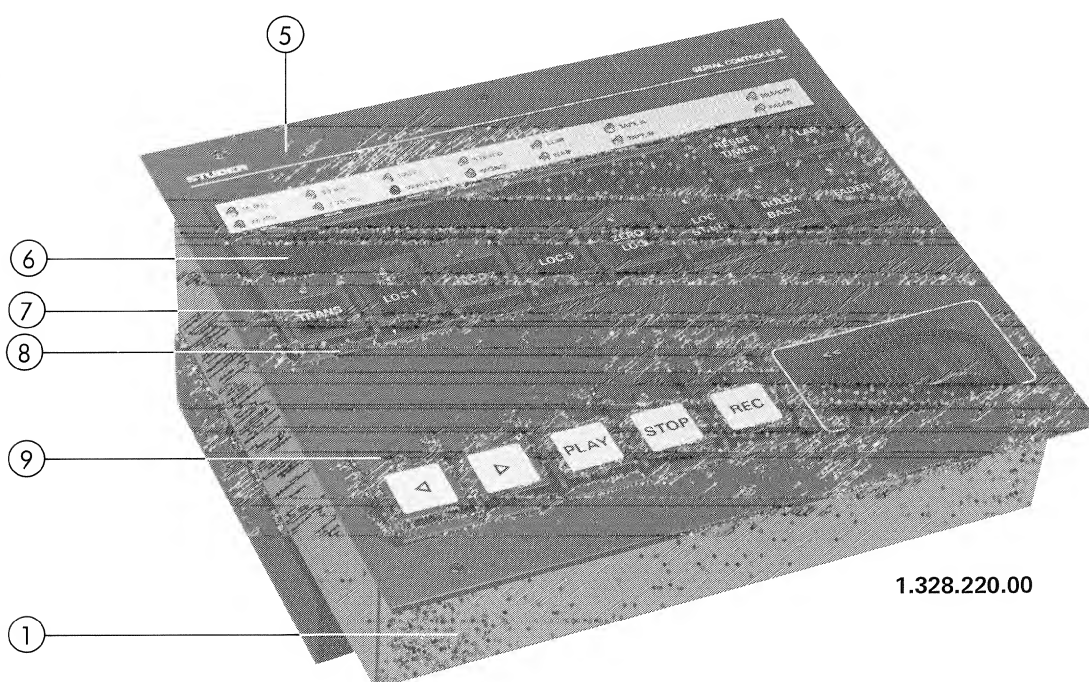
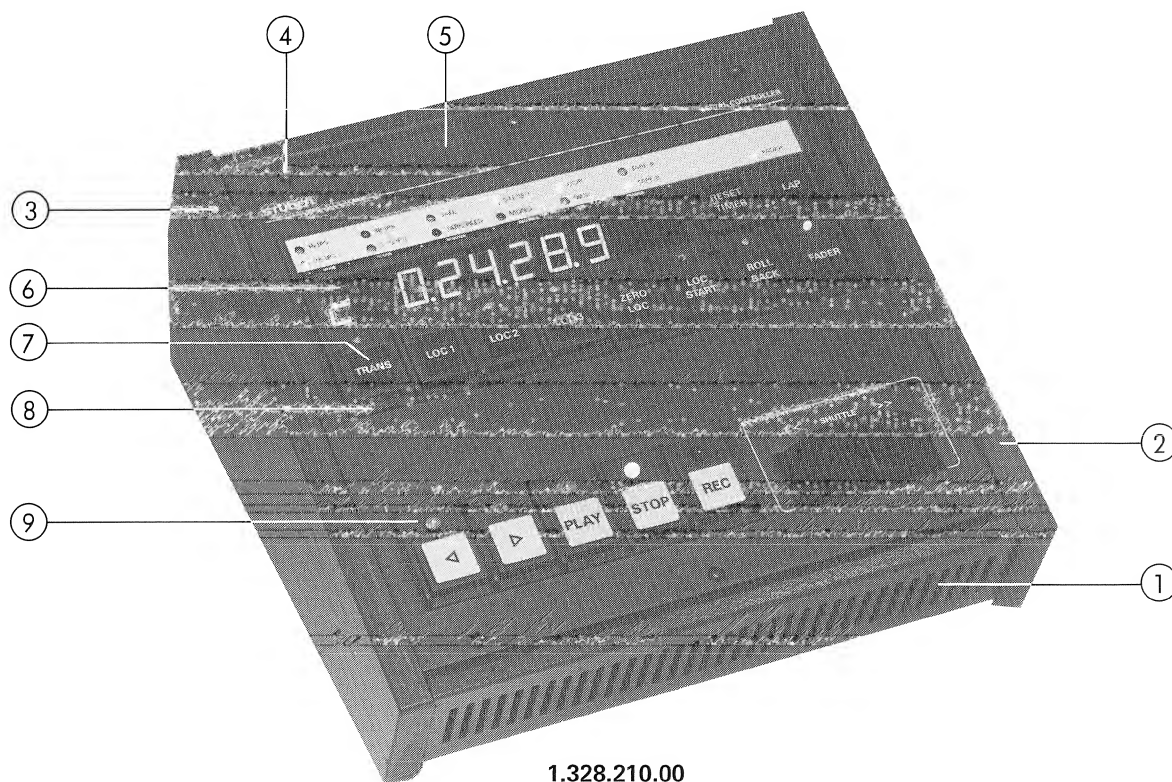
MANUFACTURERS: GI=General Instruments, Ph=Philips, Ri=Rifa, Sie=Siemens.

ORIG 85/04/23

S T U D E R (sP) 85/04/23 SU TIMER DISPLAY BOARD 1.328.271.00



REMOTE CONTROL CABINET (SERIAL) 1.328.210
 REMOTE CONTROL MODULE (SERIAL) 1.328.220



STUDER A812

REMOTE CONTROL CABINET (SERIAL) 1.328.210

REMOTE CONTROL CABINET (SERIAL) 1.328.220

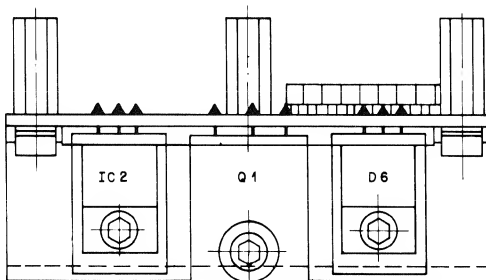
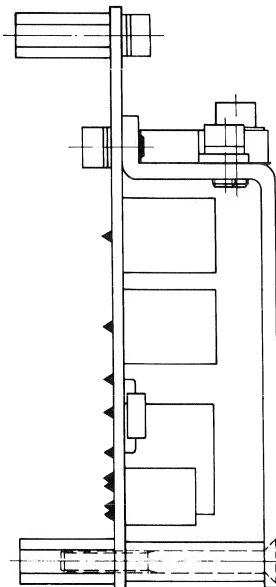
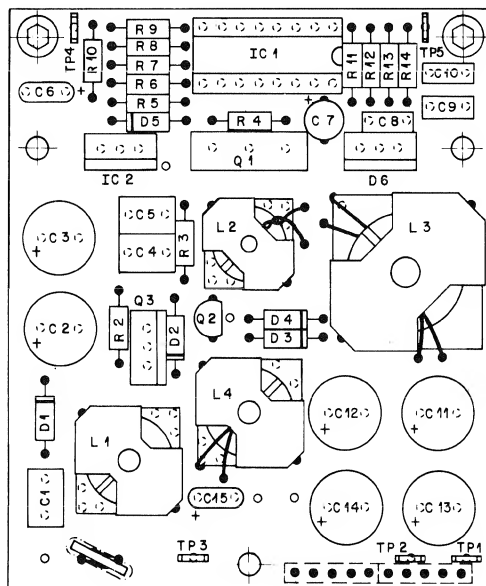
QTY	ORDER NUMBER	PART NAME	SPECIFICATION
1	1.328.210.00	Remote control cabinet (serial) (self-adhesive labels: section 8.23)	
1	1.328.220.00	Remote control module (serial) (self-adhesive labels: section 8.23)	
1	1.328.213.00	STABILIZER PCB	
3	21.53.0354	Allen screw	M4x6
3	24.16.1030	Fin washer	
3	23.01.1032	Washer	
1	1.328.211.21	REMOTE CONTROL DRIVER PCB	
4	1.010.055.27	Hex stud bolt	
4	1.010.021.27	Hex stud bolt	
4	21.53.0354	Allen screw	M3x6
4	1.010.025.21	Round head allen screw	M3x6
6	24.16.1030	Fin washer	
3	23.01.1032	Washer	
2	24.16.2030	Serrated lock washer	
01	1.820.922.00	Housing compl. (with pos.2, 3, and feet)	
4	31.02.0211	Foot	
1	1.328.220.02	Bottom cover	
1	1.328.220.01	Chassis	
6	1.010.118.27	Hex stud bolt	
6	24.16.1030	Fin washer	
6	23.01.1032	Washer	
1	1.080.715.04	Border protection	
1	1.328.220.04	Insulation	
02	1.328.210.02	Side panel	right
4	21.53.0454	Allen screw	M4x6
4	24.16.1040	Fin washer	
03	1.328.210.01	Side panel	left
4	21.53.0454	Allen screw	M4x6
4	24.16.1040	Fin washer	
04	6	1.010.025.21	Round head allen screw M3x6
05	1	1.328.217.00	Front cover compl. containing all parts marked with "■"
	1	1.328.221.00	Front cover compl. containing all parts marked with "■"
1	1.328.210.03	Front cover	
1	1.328.220.11	Front cover	
1	1.328.212.00	REMOTE CONTROL DRIVER PCB	
6	1.328.210.06	Hex stud bolt	M3x5
6	21.53.0353	Allen screw	
6	23.01.1032	Washer	
6	24.16.1030	Fin washer	
06	1	1.820.232.02	Filter screen red
07	15	1.011.210.01	Push button
	15	1.010.202.37	Pressure spring
08	1	1.820.232.01	Push button housing
	1	1.810.300.05	Damping strip, for 2 push buttons
	1	1.820.232.03	Damping strip, for 8 push buttons
09	1	1.810.300.03	Push button housing
	1	1.810.300.06	Damping strip, for 5 push buttons

10	1	1.328.215.81	Shuttle assembly compl.
	1	1.328.214.00	SHUTTLE PCB
	2	1.328.210.09	Spec. nut
	2	22.01.6030	Nut
	1	1.328.215.22	Shuttle wheel
	1	1.328.218.00	Push button compl.
	1	36.01.0302	Toothed wheel
	2	1.010.101.37	Tension spring
	1	58.99.0139	Potentiometer

M3

5 kΩ, 2 W

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
-STABILIZER PCB 1.328.213.00



INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R....01	57.11.1331	PTC		see note 2	Ph
R....02	57.11.4102	1	kOhm	2%	
R....03	57.11.4272	2.7	kOhm	2%	
R....04	57.11.4102	1	kOhm	2%	
R....05	57.11.3181	180	Ohm	1%	
R....06	57.11.4390	39	Ohm	2%	
R....07	57.11.4103	10	kOhm	2%	
R....08	57.11.3512	5.1	kOhm	1%	
R....09	57.11.3472	4.7	kOhm	1%	
R....10	57.11.3432	4.3	kOhm	1%	
R....11	57.11.3472	4.7	kOhm	1%	
R....12	57.11.3472	4.7	kOhm	1%	
R....13	57.11.4472	4.7	kOhm	2%	
R....14	57.11.4223	22	kOhm	2%	
P....01	54.02.0320	Test Point			
P....02	54.02.0320	Test Point			
P....03	54.02.0320	Test Point			
P....04	54.02.0320	Test Point			
P....05	54.02.0320	Test Point			

S T U O E R (#P) 85/02/05 SU STABILIZER BOARD 1-328-213-00 PAGE 2

INP.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUFACT.
L.....01	59.06.0474	0.47 uF	10%	PET	
C.....02	59.22.8470	47 uF	20%, 63V	EL	
C.....03	59.22.8470	47 uF	20%, 63V	EL	
C.....04	59.06.0474	0.47 uF	10%	PETP	
C.....05	59.06.0474	0.47 uF	10%	PETP	
C.....06	59.26.9109	1 uF	20%, 40V	SAL	
C.....07	59.26.16100	10 uF	-20%, 35V	EL	
C.....08	59.06.0332	3300 pF	10%	PETP	
C.....09	59.06.0224	0.22 uF	10%	PETP	
C.....10	59.06.0224	0.22 uF	10%	PETP	
C.....11	59.22.3471	470 uF	-20%, 10V	EL	
C.....12	59.22.3471	470 uF	-20%, 10V	EL	
C.....13	59.22.3471	470 uF	-20%, 10V	EL	
C.....14	59.22.3471	470 uF	-20%, 10V	EL	
C.....15	59.26.1220	22 uF	20%, 10V	SAL	
D.....01	50.04.0122	1N 4001			Mot
D.....02	50.04.1108	5.6 uF			Ses,ITT
D.....03	50.04.0125	1N 4448	BZX83 C 5V6, BZX55 C 5V6, ZPO 5.6		Fc,ITTPH,Ses
D.....04	50.04.0125	1N 4448			Fc,ITTPH,Ses
D.....05	50.04.0122	1N 4001			Mot
D.....06	50.04.0517	8Y3Z-200			Mot,Ph
IC.....01	50.05.0279	SG 35248N			SG
IC.....02	50.10.0104	LM 317T	LM 317 SP		Tho,Mot,n5,TI
J.....01			see note 1		
L.....01	1.022+252.00	0.32 MH	Filter Coil		St
L.....02	1.022+224.00		Power Supply Transformer		St
L.....03	1.022+217.00	46 uH	HF-Coil, 5A		St
L.....04	1.022+202.00	16.9 uH	Filter Coil		St
Q.....01	50.03.0517	2 SC 3012	NPN		NEC
Q.....02	50.03.0551	BC 619	NPN		Mot,Ph
Q.....03	50.99.0106	T 2800	400V, 8A Triac		PH

S T U O E R (P) 85/02/05 SU STABILIZER BOARD 1.328.213-00 PAGE 1

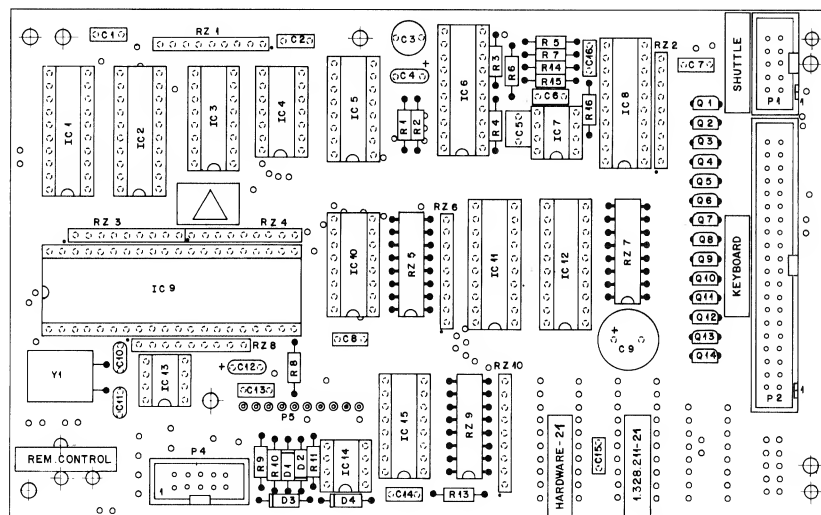
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
EL=Electrolytic, SAL=Solid Aluminium, PETP=Polyester					
MANUFACTURERS: Fc=Fairchild, ITT=Intermetall, Mot=Motorola, NEC=Nippon Electric Corp., NS=National Semiconductors, Ph=Philips, Ses=Sescosem, SG=Silicon General, St=Studer Tho=Thomson, TI=Texas Instruments					
note 1 - Connector: 2 pieces Studer Nr.53030202					
note 2 - PTC Thermistor: R @ 25 degree Celsius = 4.7 Ohm I @ 55 degree Celsius = 330 mA Philips Nr.2322 663 13311					

ORIG 85/02/05

S T U O E R (* P) 85/02/05 SU STABILIZER BOARD 1-328-213-00 PAGE 3

STUDER

-REMOTE CONTROL DRIVER PCB 1.328.211.21



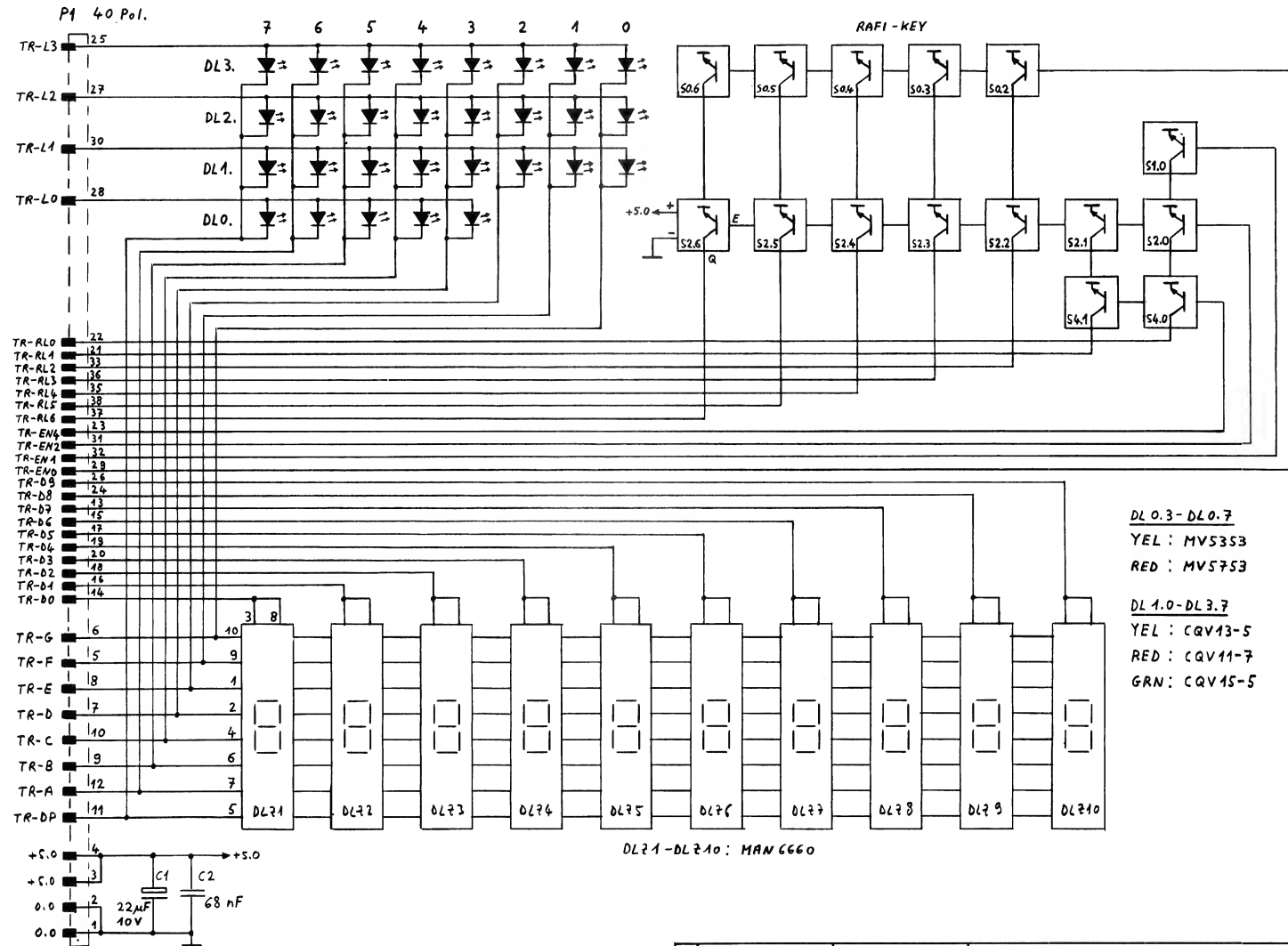
NO.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
[20]	[1-12]	50-15-0113	NS 7549H N		
[20]	[1-13]	50-15-0114	UHM-0095		Sp
[20]	[1-14]	50-15-0122	TL7004A		N1
[20]	[1-15]	50-15-0115	NS 7516AP	OS 3695 N	TS
[20]	[1-16]	50-15-0102	NE 590 N		5iq
[20]	[1-16]	50-15-0102	not used		
[20]	[1-17]	50-15-0102	not used		
[20]	P-1-1-1			see note 2	
[20]	P-1-1-2		not used	see note 3	
[20]	P-1-1-3			see note 2	
[20]	P-1-1-4			see note 4	
[20]	P-1-1-5			see note 4	
[20]	P-1-1-6	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-7	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-8	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-9	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-10	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-11	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-12	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-13	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-14	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-15	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-16	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-17	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-18	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-19	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-20	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-21	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-22	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-23	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-24	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-25	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-26	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-27	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-28	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-29	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-30	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-31	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-32	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-33	50-03-0352	ZTX 751 S		Fe
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[20]	P-1-1-49	50-03-0352	ZTX 751 S		Fe
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[20]	P-1-1-55	50-03-0352	ZTX 751 S		Fe
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[20]	P-1-1-57	50-03-0352	ZTX 751 S		Fe
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[20]	P-1-1-73	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-74	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-75	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-76	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-77	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-78	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-79	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-80	50-03-0352	ZTX 751 S		Fe
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[20]	P-1-1-85	50-03-0352	ZTX 751 S		Fe
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[20]	P-1-1-87	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-88	50-03-0352	ZTX 751 S		Fe
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[20]	P-1-1-92	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-93	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-94	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-95	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-96	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-97	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-98	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-99	50-03-0352	ZTX 751 S		Fe
[20]	P-1-1-100	50-03-0352	ZTX 751 S		Fe

STUDER (21) 86/12/01 00 REMOTE CONTROL DRIVER BOARD 1.328.211.00 PAGE 2

IND.	PDS NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUFACT.
[20]	85:02:01 PCB	Layout - 11			
[21]	85:10:12 IC12-SN7545N	delivered for spare purpose only, new devices IC12 is not available			
		Y1: C10: C11 improved accuracy of quartz frequency.			
Note 2 - Connector:	10 Contacts				
	Studier Nr.	54:14:2003			
	Yamachi Nr.	FAP-10/08/74			
	Burndy Nr.	8PM 7 8 10 900 GS			
Note 3 - Connector:	40 Contacts				
	Studier Nr.	54:14:2004			
	Yamachi Nr.	FAP-10/08/74			
	Burndy Nr.	8PM 9 8 40 800 GS			
Note 4 - Connector:	10 Pieces				
	Studier Nr.	1:010:018:54			
Cer-Ceramic: L1=Electrolytic PETP=Polyester Film, PP=Polypropylene, Sol-Solid=Aluminum					
MANUFACTURERS: Fc=Fairchild; Fm=Formica; H=Hitchcock; I=Intersil; Ii=Intel; Ii=Intel; A=Automobile; MC=National Semiconductor; P=Philips; R=RCR Corporation; S=Seiscum; S=SG/Skytek; S=Siemens; S=Siemens; S=Siemens; S=Siemens					

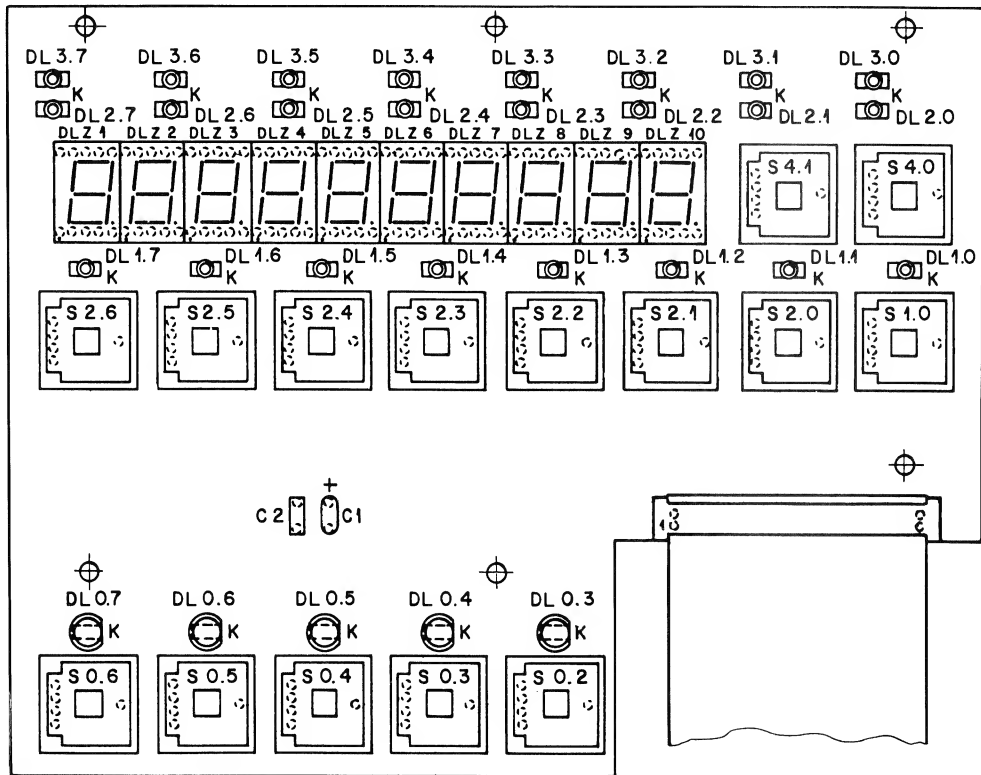
ORIG 85/02/01 (20) 85/02/01 (21) 86/12/01
S Y U O F R (21) 86/12/01 80 REMOTE CONTROL DRIVER BOARD 1.326.211.00 PAGE 4

REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 -REMOTE CONTROL DISPLAY PCB 1.328.212.00



28.11.84 CHE	A820/A812			
STUDER	REMOTE CONTROL DISPLAY BOARD	SC	1.328.212.00	PAGE 1 OF 1

REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
-REMOTE CONTROL DISPLAY PCB 1.328.212.00

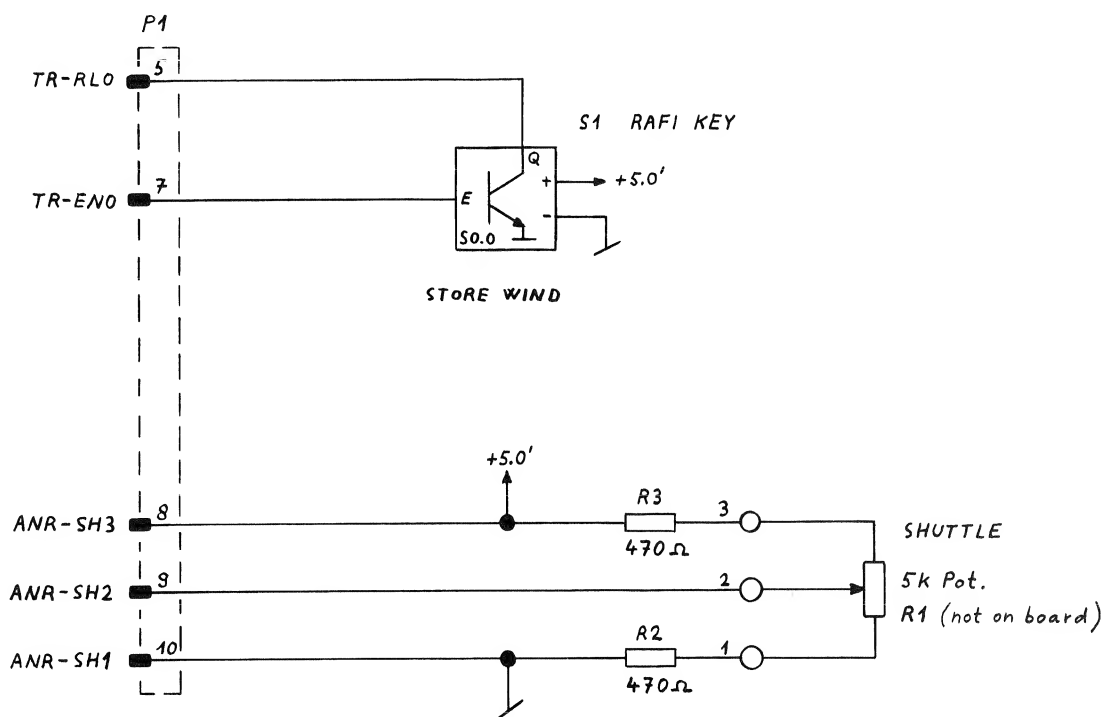


IND.	POS+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C++01	594001200	22 nF	-20%, 10V +	SAL	
C++02	594000000	0.1 nF	10%, 10V +	PETP	
DL++03	50042111	MV 5753	LED+ Red	HMP 3301	Si
DL++04	50042112	MV 5353	LED+ Yellow	HMP 3401	Si
DL++05	50042112	MV 5353	LED+ Yellow	HMP 3401	Si
DL++06	50042112	MV 5353	LED+ Yellow	HMP 3401	Si
DL++07	50042112	MV 5353	LED+ Yellow	HMP 3401	Si
DL++10	50042130	COV 13-7	LED+ Yellow		Si
DL++11	50042130	COV 13-7	LED+ Yellow		Si
DL++12	50042130	COV 13-7	LED+ Yellow		Si
DL++13	50042130	COV 13-7	LED+ Yellow		Si
DL++14	50042130	COV 13-7	LED+ Yellow		Si
DL++15	50042130	COV 13-7	LED+ Yellow		Si
DL++16	50042130	COV 13-7	LED+ Yellow		Si
DL++17	50042130	COV 13-7	LED+ Yellow		Si
DL++20	50042130	COV 13-7	LED+ Yellow		Si
DL++21	50042130	COV 13-7	LED+ Yellow		Si
DL++22	50042130	COV 13-7	LED+ Yellow		Si
DL++23	50042130	COV 13-7	LED+ Yellow		Si
DL++24	50042131	COV 15-5	LED+ Green	COV 15-6	Si
DL++25	50042129	COV 11-7	LED+ Red		Si
DL++26	50042130	COV 13-7	LED+ Yellow		Si
DL++27	50042131	COV 15-5	LED+ Green	COV 15-6	Si
DL++30	50042130	COV 13-7	LED+ Yellow		Si
DL++31	50042130	COV 13-7	LED+ Yellow		Si
DL++32	50042130	COV 13-7	LED+ Yellow		Si
DL++33	50042130	COV 13-7	LED+ Yellow		Si
DL++34	50042130	COV 13-7	LED+ Yellow		Si
DL++35	50042130	COV 13-7	LED+ Yellow		Si
DL++36	50042130	COV 13-7	LED+ Yellow		Si
DL++37	50042130	COV 13-7	LED+ Yellow		Si
DL++01	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1
DL++02	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1
DL++03	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1
DL++04	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1

IND.	POS+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
DL++05	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1
DL++06	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1
DL++07	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1
DL++08	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1
DL++09	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1
DL++10	73010124	MAN 6660	7-Segments+ Red	Brightness "G"	G1
S++02	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++03	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++04	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++05	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++06	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++07	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++08	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++09	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++10	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++11	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++12	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++13	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++14	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++15	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++16	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++17	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++18	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++19	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	
S++20	95030261	TTL-switch	1 * DC	RaFi Nr. 3413001.110	

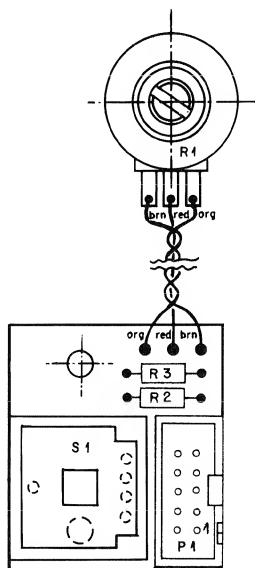
SAL=Solid Aluminium PETP=Polyester
MANUFACTURERS: G1-General Instruments; Si=Siemens
ORIG 64/11/28 (01) 86/01/23
STUDER (01) 86/01/23 PB REMOTE CONTROL DISPLAY BOARD 1.328.212.00 PAGE 2

REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 -SHUTTLE PCB 1.328.214.00



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STUDER	SHUTTLE BOARD	SC	1.328.214.00	PAGE 1 OF 1

REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
-SHUTTLE PCB 1.328.214.00



IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R....01	54.14.2001		see note 1	
	R....02	57.11.4471	470 Ohm	2%	
	R....03	57.11.4471	470 Ohm	2%	
	S....01	55.03.0261	TTL-switch	1 ÷ 0C, Rafi Nr.3.13001.110	

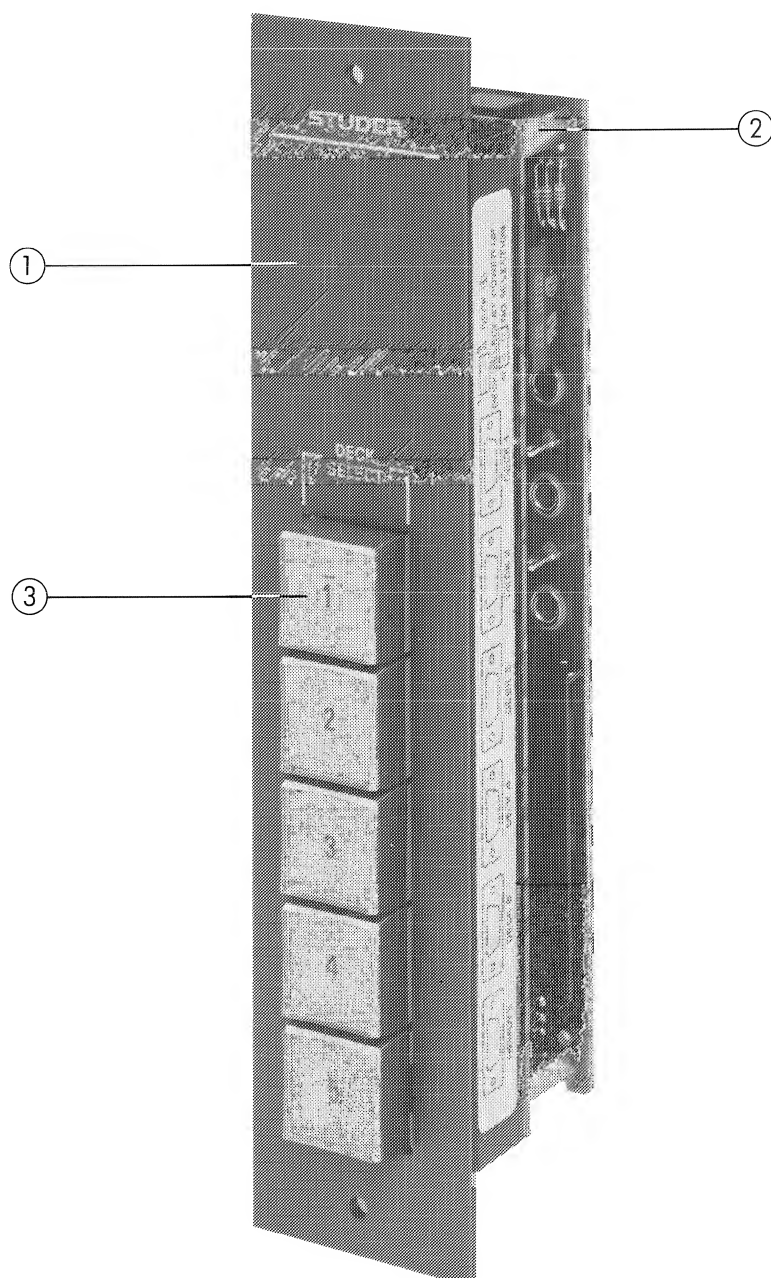
Note 1 - Connector 10 contacts: Yamaichi Nr. FAP-10-0824
Burndy Nr. BPH 9 B 10 B00 GS

ORIG 85/03/22

STUDER (OP) 85/03/22 SU SHUTTLE BOARD

1.328.214.00 PAGE 1

SERIAL REMOTE SELECTOR 1.328.248.00

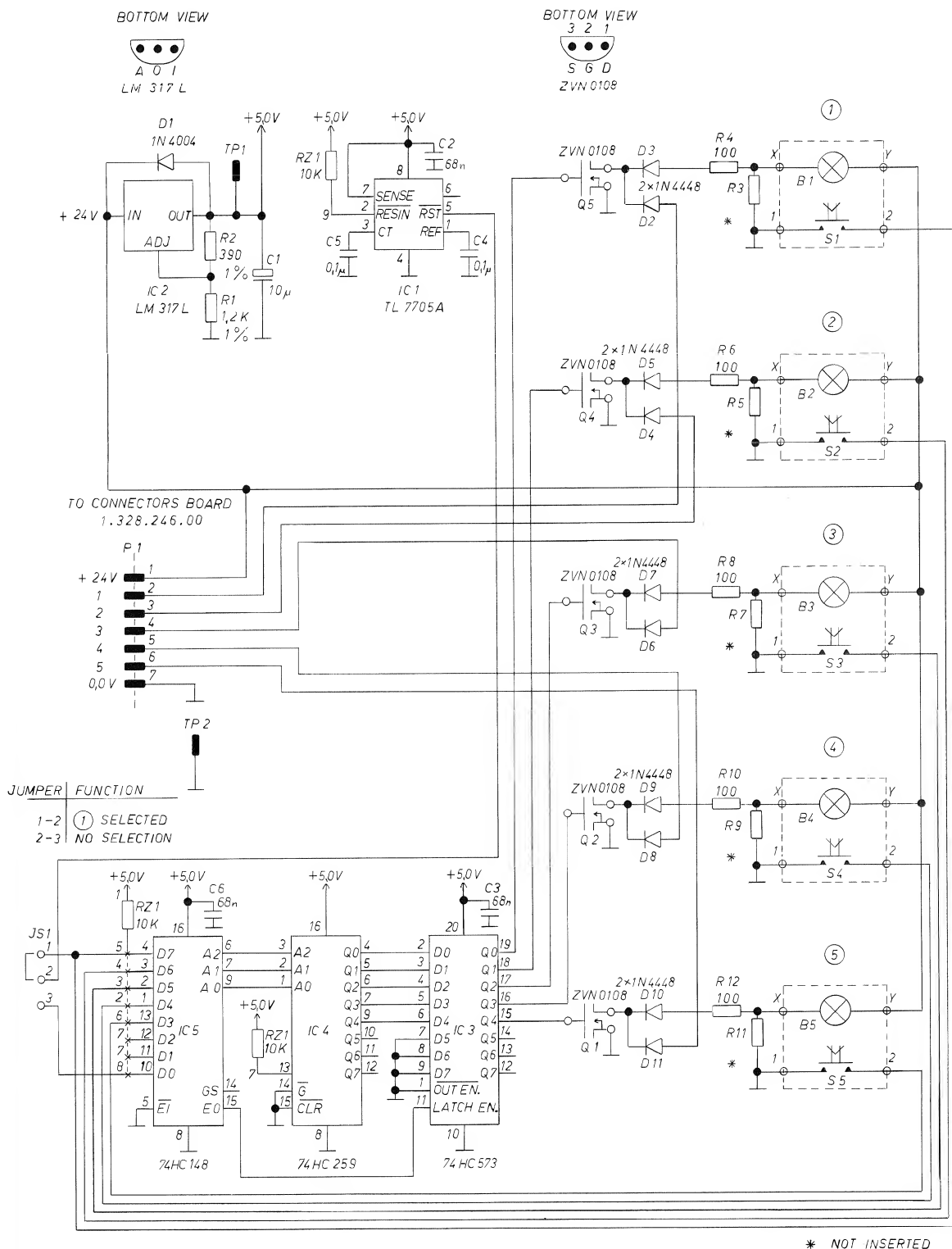


STUDER A812

SERIAL REMOTE SELECTOR 1.328.248.00

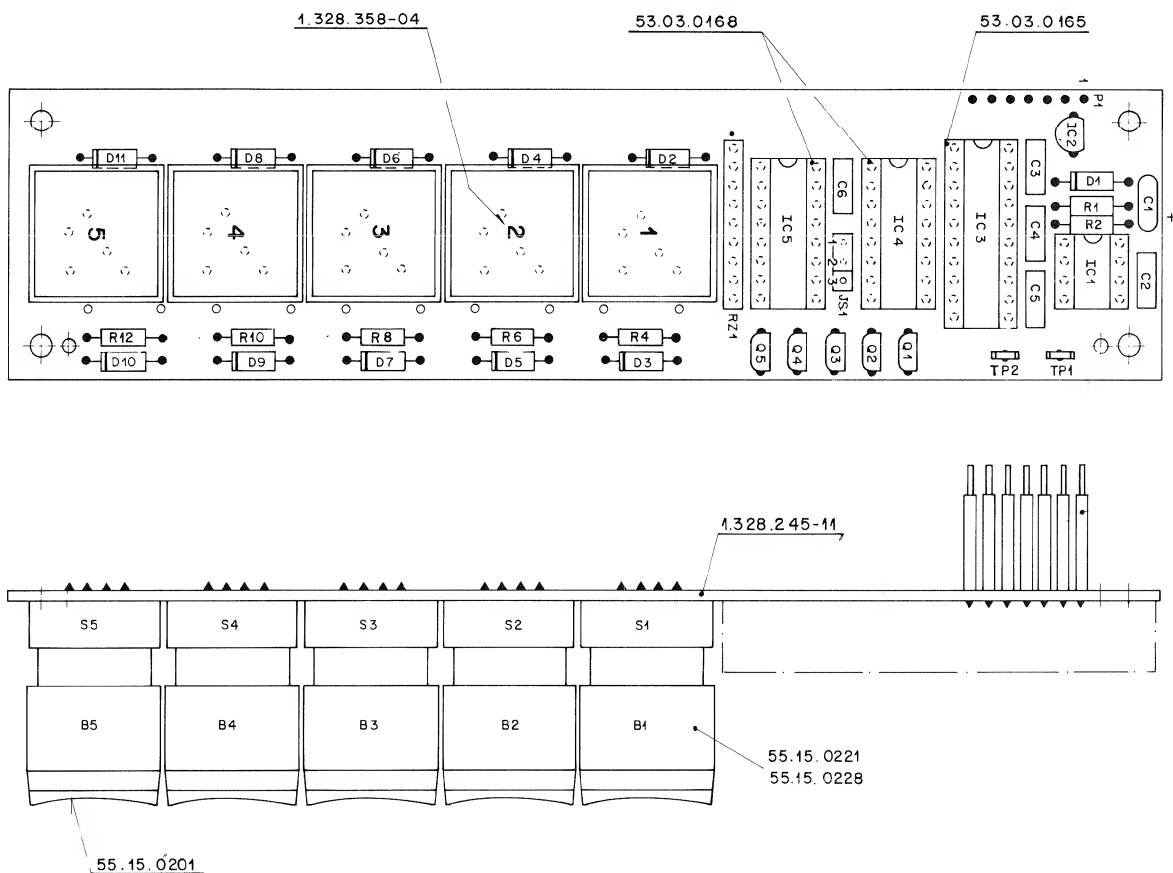
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.248.00	Serial remote selector	
01	1	1.328.248.01	Frontpanel	
02	4	1.010.110.27	Hex stud bolt	
	8	23.01.1032	Washer D 3,2/6 x0,5	
	4	21.53.0354	Round head allen screw	
03	5	55.15.0231	Push button (pulse)	
	5	55.15.0201	Push button cover concave	
	5	55.15.0221	Filter screen white	
	5	55.15.0228	Push button housing	
	1	1.328.358.04	Labels	

SERIAL REMOTE SELECTOR —KEYBOARD 1.328.245.00



0 07.01.87 C METZ	...	...	...	...
SERIAL REMOTE SELECTOR				PAGE 1 OF 1
STUDER	KEYBOARD	'ESE'	SC	1.328.245-00

SERIAL REMOTE SELECTOR —KEYBOARD 1.328.245.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.26.2100	10 u	20%, 16V / SAL			Q.....3	50.03.1505	ZVN 0108 A	80 V, 1 A, N-Channel FET	Fe.	
C.....2	59.06.0683	.068 u	10%, 63V / PETP			Q.....4	50.03.1505	ZVN 0108 A	80 V, 1 A, N-Channel FET	Fe.	
C.....3	59.06.0683	.068 u	10%, 63V / PETP			Q.....5	50.03.1505	ZVN 0108 A	80 V, 1 A, N-Channel FET	Fe.	
C.....4	59.06.0104	.1 u	10%, 63V / PETP								
C.....5	59.06.0104	.1 u	10%, 63V / PETP			R.....1	57.11.3122	1.2 k	1%, 0207 / MF		
C.....6	59.06.0683	.068 u	10%, 63V / PETP			R.....2	57.11.3391	390	1%, 0207 / MF		
						R.....3			Not inserted		
D.....1	50.04.0105	1N 4004	1A, 400V / Si.			R.....4	57.11.4101	100	2%, 0207 / MF		
D.....2	50.04.0125	1N 4448	0.1A, 75V / Si.			R.....5			Not inserted		
D.....3	50.04.0125	1N 4448	0.1A, 75V / Si.			R.....6	57.11.4101	100	2%, 0207 / MF		
D.....4	50.04.0125	1N 4448	0.1A, 75V / Si.			R.....7			Not inserted		
D.....5	50.04.0125	1N 4448	0.1A, 75V / Si.			R.....8	57.11.4101	100	2%, 0207 / MF		
D.....6	50.04.0125	1N 4448	0.1A, 75V / Si.			R.....9			Not inserted		
D.....7	50.04.0125	1N 4448	0.1A, 75V / Si.			R.....10	57.11.4101	100	2%, 0207 / MF		
D.....8	50.04.0125	1N 4448	0.1A, 75V / Si.			R.....11			Not inserted		
D.....9	50.04.0125	1N 4448	0.1A, 75V / Si.			R.....12	57.11.4101	100	2%, 0207 / MF		
D.....10	50.04.0125	1N 4448	0.1A, 75V / Si.								
D.....11	50.04.0125	1N 4448	0.1A, 75V / Si.			RZ....1	57.88.4103	8 * 10 k	In line		
B.....1	51.02.0158	24 V, 0.024 A, 0.6 W, BI PIN T 1				S.....1	55.15.0231	1 * A	Momentary Key Switch	EAO	
B.....2	51.02.0158	24 V, 0.024 A, 0.6 W, BI PIN T 1				S.....2	55.15.0231	1 * A	Momentary Key Switch	EAO	
B.....3	51.02.0158	24 V, 0.024 A, 0.6 W, BI PIN T 1				S.....3	55.15.0231	1 * A	Momentary Key Switch	EAO	
B.....4	51.02.0158	24 V, 0.024 A, 0.6 W, BI PIN T 1				S.....4	55.15.0231	1 * A	Momentary Key Switch	EAO	
B.....5	51.02.0158	24 V, 0.024 A, 0.6 W, BI PIN T 1				S.....5	55.15.0231	1 * A	Momentary Key Switch	EAO	
IC.....1	50.11.0122	TL 7705 A		Supply Supervisor	TI	TE.....1	54.02.0320	2.8 * 0.8	Straight Soldering Strip		
IC.....2	50.10.0108	LM 317 LZ		Adjustable Voltage Regulator	NS	TE.....2	54.02.0320	2.8 * 0.8	Straight Soldering Strip		
IC.....3	50.17.1573	74 HC 573		Octal 3-state Noninv. D-type Transp. Latch							
IC.....4	50.17.1259	74 HC 259		8 Bit Addressable Latch / 1 of 8 Decoder							
IC.....5	50.17.1148	74 HC 148		8 to 3 Line Priority Encoder							
JS.....1	54.01.0021	2 * 0.63		Jumper (and 3 pins 54.01.0020)							
P.....1	1.010.019.54	7 * 1 Pin		Right Contact Pin, L = 20 MM							
Q.....1	50.03.1505	ZVN 0108 A		80 V, 1 A, N-Channel FET	Fe.						
Q.....2	50.03.1505	ZVN 0108 A		80 V, 1 A, N-Channel FET	Fe.						
S T U D E R (00) 87/01/08 CM KEYBOARD PL 1.328.245-00 PAGE 1						S T U D E R (00) 87/01/08 CM KEYBOARD PL 1.328.245-00 PAGE					

STUDER (00) 87/01/08 CM KEYBOARD

PL 1.328.245-00 PAGE 1

STUDER (00) 87/01/08 CM KEYBOARD

PL 1.328.245-00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
------	---------	----------	-------	-----------------------------	--------

CER=Ceramic, EL=Electrolytic, MP=Metalized Paper, MPC=Metalized Poly-carbonate, MPT=Metalized Polyester, PC=Polycarbonate, PET=Polyester, PP=Polypropylene, PS=Polystyrol, SAL=Solid Aluminium, TA=Tantal, Cermet=Ceramic Metal, MF=Metal Film.

MANUFACTURERS :

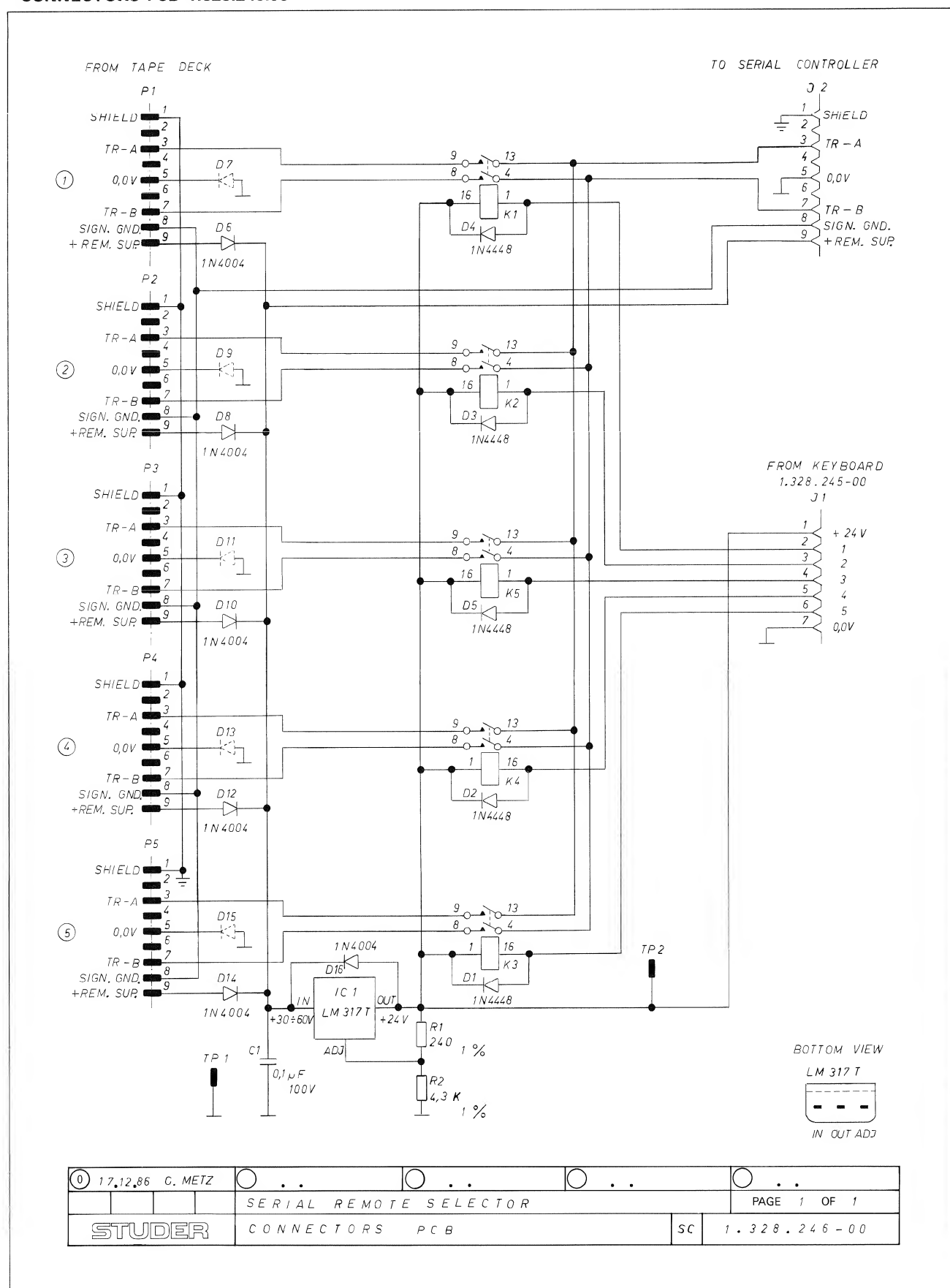
EAO = Elektro Apparaten Olten
Fe = Ferranti
NS = National Semiconductors
TI = Texas Instruments

ORIG 87/01/08

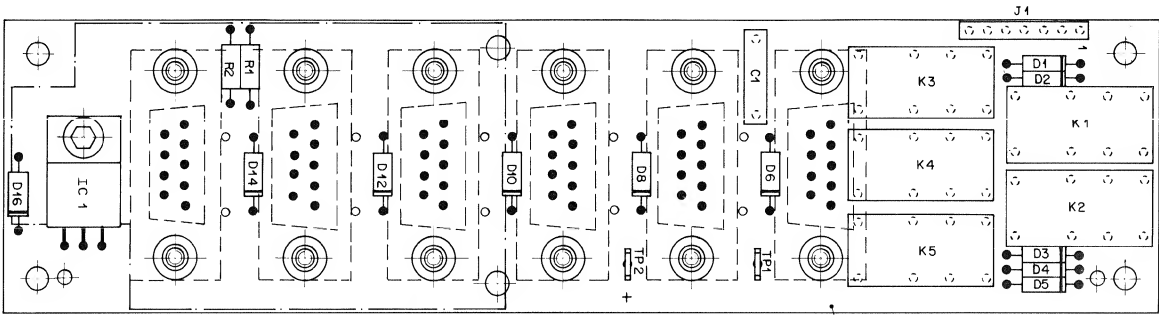
STUDER (00) 87/01/08 CM KEYBOARD

PL 1.328.245-00 PAGE 3

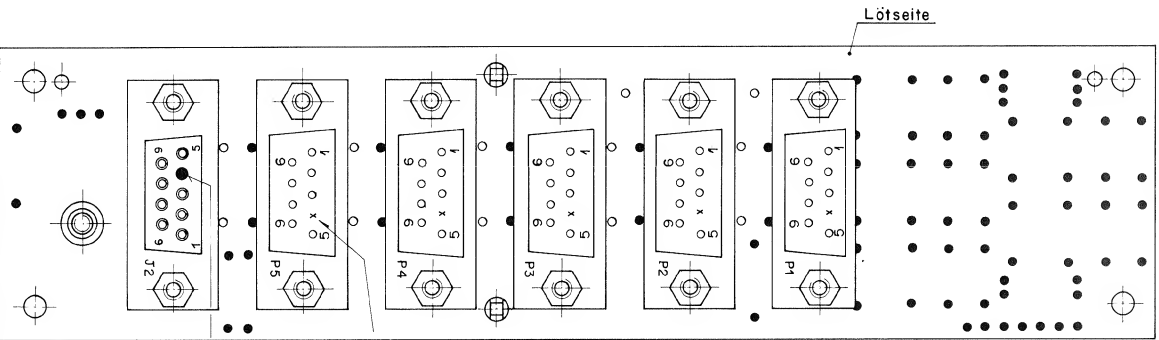
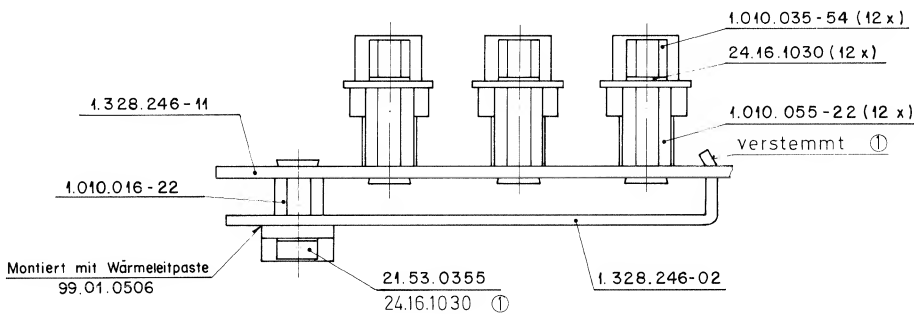
SERIAL REMOTE SELECTOR **—CONNECTORS PCB 1.328.246.00**



SERIAL REMOTE SELECTOR
-CONNECTORS PCB 1.328.246.00



Bestückungsseite



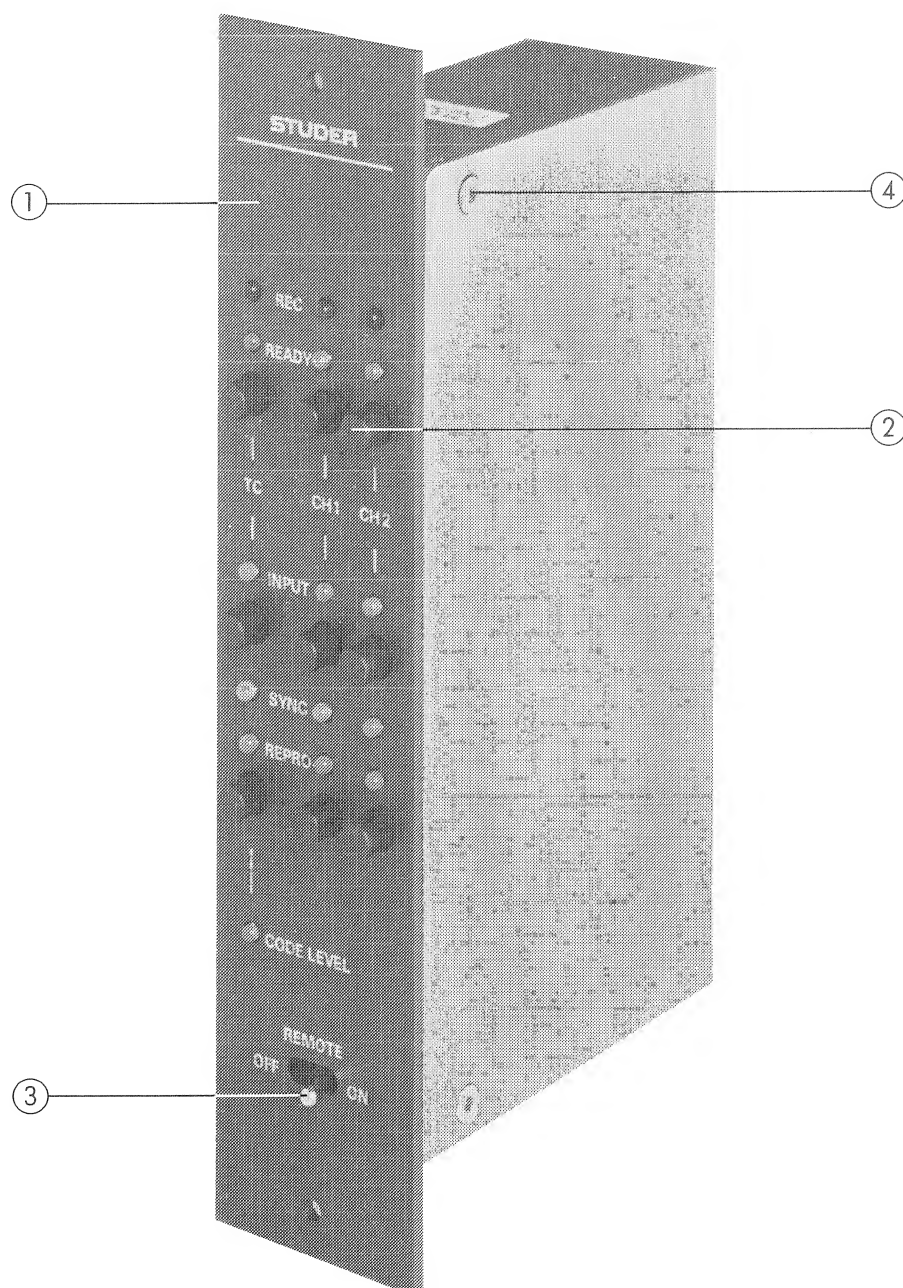
Lötseite

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.31.6104	0.1 u	10%, 100V, MPETP			R.....2	57.11.3432	4.3 k	1%, 0207, MF		
D.....1	50.04.0125	1N 4448	75 V, 100 nA, Si			TP....1	54.02.0320	2.8 * 0.8	straight soldering strip		
D.....2	50.04.0125	1N 4448	75 V, 100 nA, Si			TP....2	54.02.0320	2.8 * 0.8	straight soldering strip		
D.....3	50.04.0125	1N 4448	75 V, 100 nA, Si								
D.....4	50.04.0125	1N 4448	75 V, 100 nA, Si								
D.....5	50.04.0125	1N 4448	75 V, 100 nA, Si								
D.....6	50.04.0105	1N 4004	400 V, 1A, Si								
D.....7			not inserted								
D.....8	50.04.0105	1N 4004	400 V, 1A, Si								
D.....9			not inserted								
D.....10	50.04.0105	1N 4004	400 V, 1A, Si								
D.....11			not inserted								
D.....12	50.04.0105	1N 4004	400 V, 1A, Si								
D.....13			not inserted								
D.....14	50.04.0105	1N 4004	400 V, 1A, Si								
D.....15			not inserted								
D.....16	50.04.0105	1N 4004	400 V, 1A, Si								
IC.....1	50.10.0104	LM 317 SP	Voltage regulator		Met, TI						
J.....1	53.03.0218		7 Pins single line								
J.....2	54.13.0021		D-type, 9 pins straight fem. print connector								
K.....1	56.04.0161	RZ 2	24 V, 2 * u		ITT						
K.....2	56.04.0161	RZ 2	24 V, 2 * u		ITT						
K.....3	56.04.0161	RZ 2	24 V, 2 * u		ITT						
K.....4	56.04.0161	RZ 2	24 V, 2 * u		ITT						
K.....5	56.04.0161	RZ 2	24 V, 2 * u		ITT						
P.....1	54.13.0031		D-type, 9 pins straight male print connector								
P.....2	54.13.0031		D-type, 9 pins straight male print connector								
P.....3	54.13.0031		D-type, 9 pins straight male print connector								
P.....4	54.13.0031		D-type, 9 pins straight male print connector								
P.....5	54.13.0031		D-type, 9 pins straight male print connector								
R.....1	57.11.3241	240	1%, 0207, MF								

PARALLEL CHANNEL REMOTE CONTROL 1.328.267.00

PARALLEL CHANNEL REMOTE CONTROL INTERFACE KIT 1.811.901.00

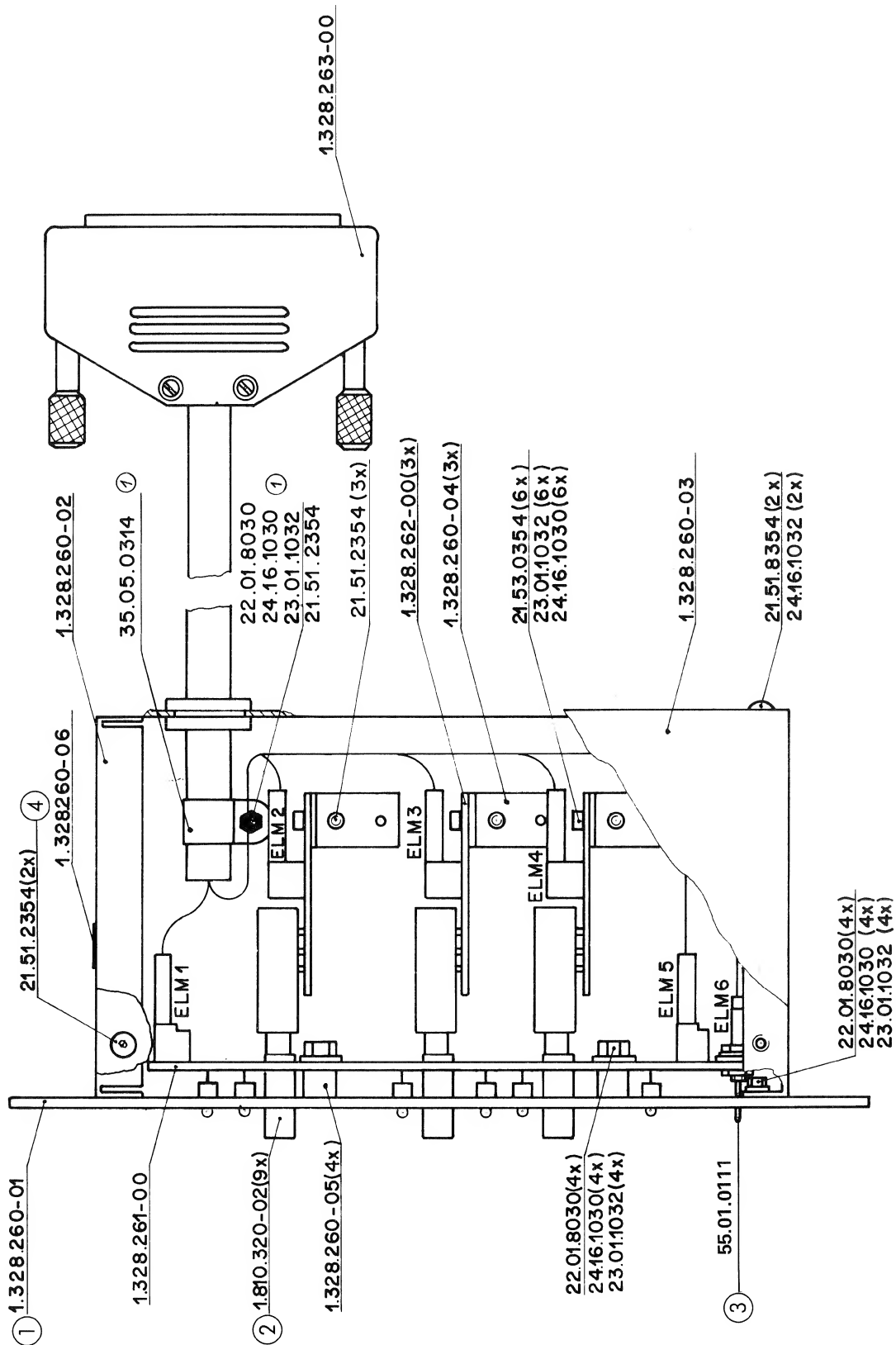
PARALLEL CHANNEL REMOTE CONTROL BOARD 1.328.264.00



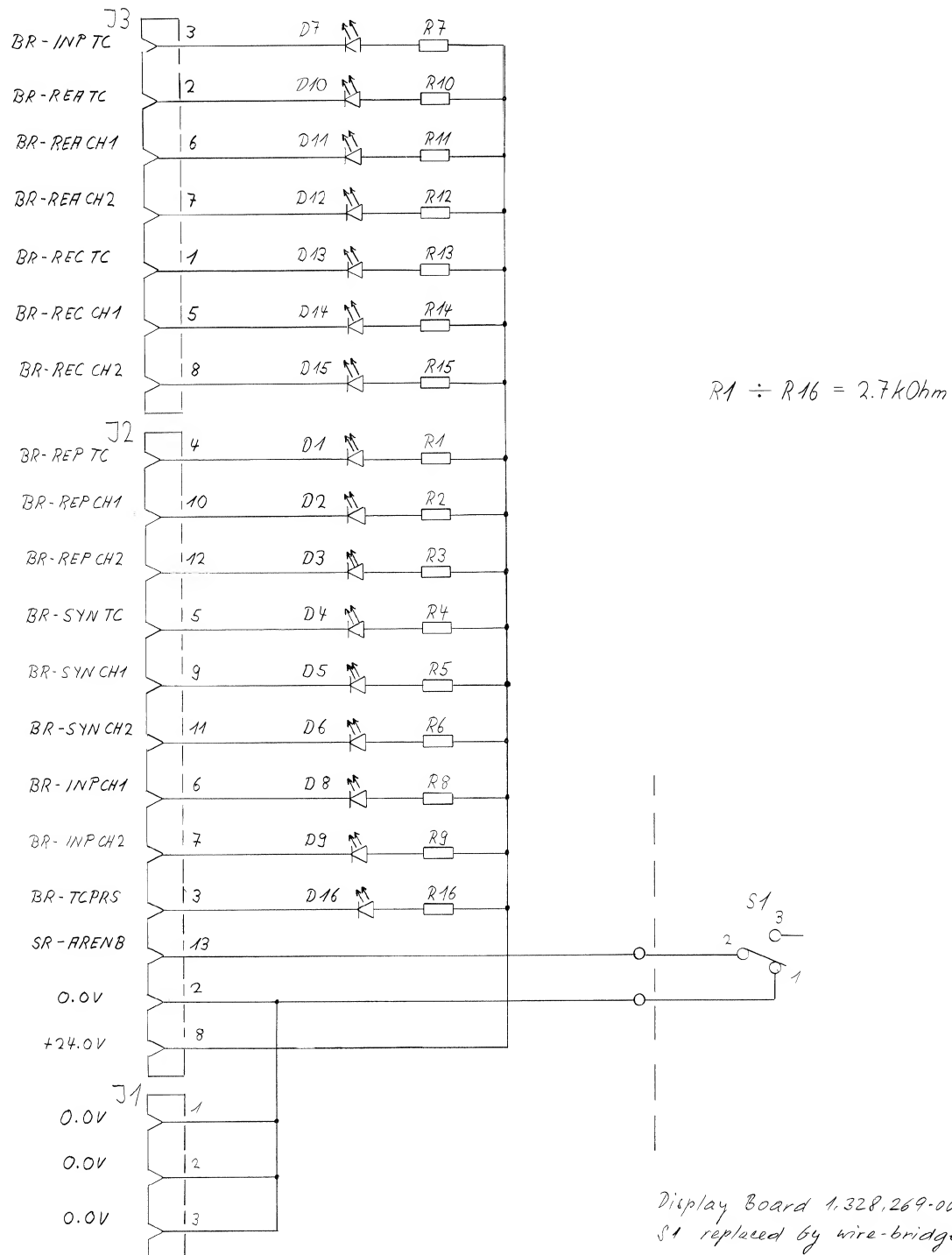
PARALLEL CHANNEL REMOTE CONTROL 1.328.267.00

PARALLEL CHANNEL REMOTE CONTROL INTERFACE KIT 1.811.901.00

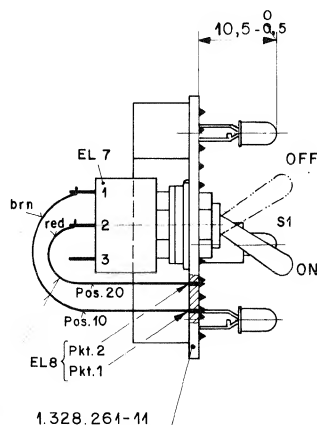
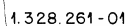
PARALLEL CHANNEL REMOTE CONTROL BOARD 1.328.264.00



DISPLAY BOARD 1.328.261.00



① 40287 WEG	○ ..	○ ..	○ ..	○ ..
				PAGE 1 OF 1
STUDER	DISPLAY BOARD			1.328.261.00

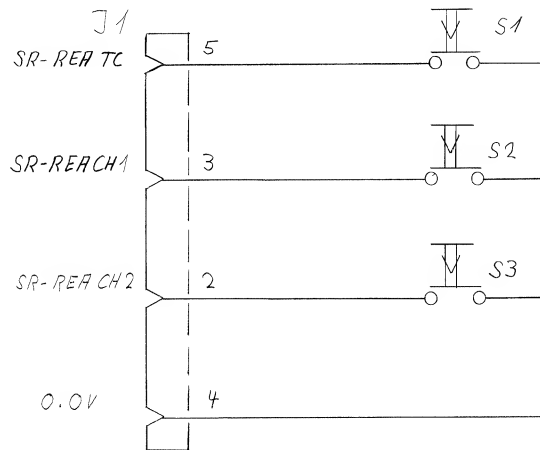


1.328.261-93

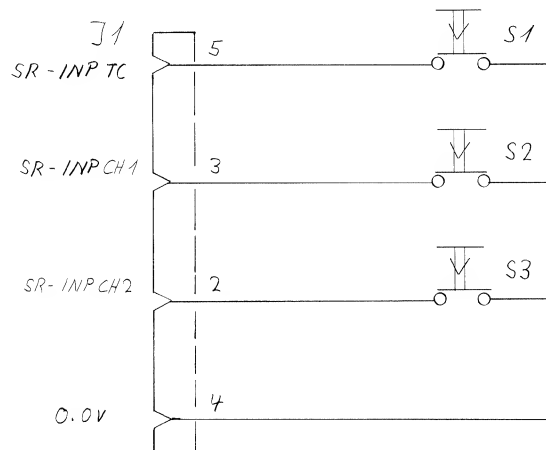
1.328.264-11

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	DL...01	50.04.2130	LY 3160		Sie		R....16	57.11.4272	2.7 kOhm	ZK	
	DL...02	50.04.2130	LY 3160		Sie						
	DL...03	50.04.2130	LY 3160		Sie		S....01	55.01.0111		see Note 1	
	DL...04	50.04.2130	LY 3160		Sie						
	DL...05	50.04.2130	LY 3160		Sie						
	DL...06	50.04.2130	LY 3160		Sie						
	DL...07	50.04.2130	LY 3160		Sie						
	DL...08	50.04.2130	LY 3160		Sie						
	DL...09	50.04.2130	LY 3160		Sie						
	DL...10	50.04.2131	LG 3160		Sie						
	DL...11	50.04.2131	LG 3160		Sie						
	DL...12	50.04.2131	LG 3160		Sie						
	DL...13	50.04.2129	LS 3160		Sie						
	DL...14	50.04.2129	LS 3160		Sie						
	DL...15	50.04.2129	LS 3160		Sie						
	DL...16	50.04.2131	LG 3160		Sie						
(00)	J....01	54.01.0287		AMP Nr. 163.680-3							
	J....02	54.01.0292		AMP Nr. 1-163.680-3							
(01)	J....03	54.01.0218		AMP Nr. 163.680-5							
	J....03	54.01.0217		AMP Nr. 163.680-7							
	R....01	57.11.4272	2.7 kOhm	ZK		(01)	06.04.87	Error in Printout.			
	R....02	57.11.4272	2.7 kOhm	ZK							
	R....03	57.11.4272	2.7 kOhm	ZK		Note 1 - Toggle Switch					
	R....04	57.11.4272	2.7 kOhm	ZK		Stud nr. 55.01.0111					
	R....05	57.11.4272	2.7 kOhm	ZK		Augat nr. M105 SYZG					
	R....06	57.11.4272	2.7 kOhm	ZK		CxK nr. 7105-S-Y-Z-Q					
	R....07	57.11.4272	2.7 kOhm	ZK		Dialight nr. 571-1321-0101-011					
	R....08	57.11.4272	2.7 kOhm	ZK							
	R....09	57.11.4272	2.7 kOhm	ZK							
	R....10	57.11.4272	2.7 kOhm	ZK							
	R....11	57.11.4272	2.7 kOhm	ZK		MANUFACTURERS: AMP=AMP Incorporated, Sie=Siemens					
	R....12	57.11.4272	2.7 kOhm	ZK							
	R....13	57.11.4272	2.7 kOhm	ZK							
	R....14	57.11.4272	2.7 kOhm	ZK							
	R....15	57.11.4272	2.7 kOhm	ZK		ORIG 87/02/10	(01)	87/04/06			

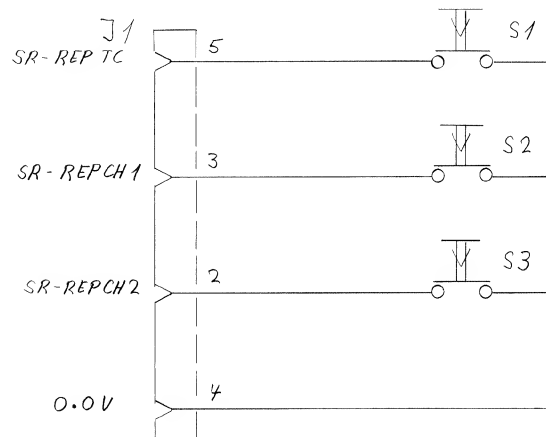
KEYBOARD 1-3 1.328.262.00



KEY "1"



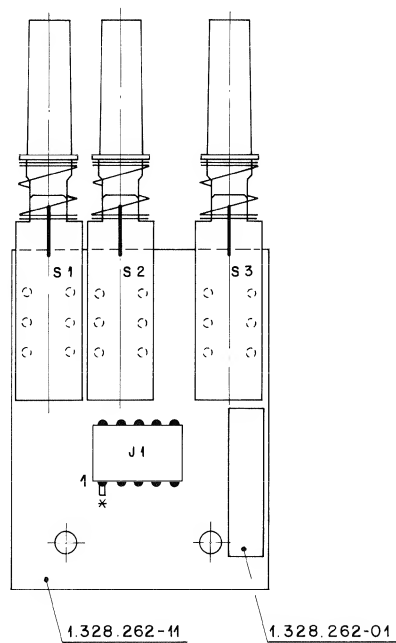
KEY "2"



KEY "3"

④ 40287 WEG	○ ..	○ ..	○ ..	○ ..
				PAGE 1 OF 1
STUDER	KEY BOARD "1"-3			1.328.262.00

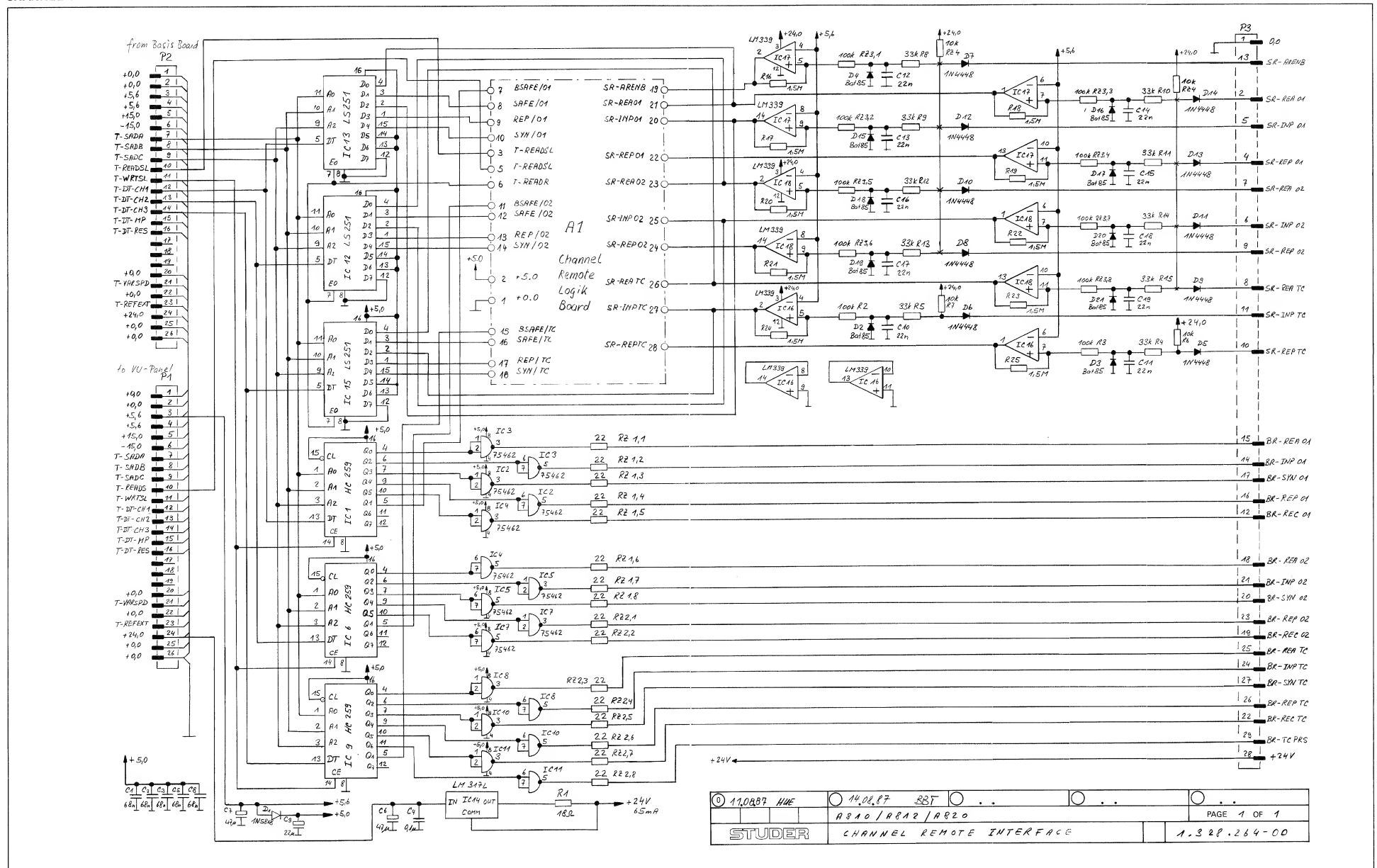
KEYBOARD 1-3 1.328.262.00



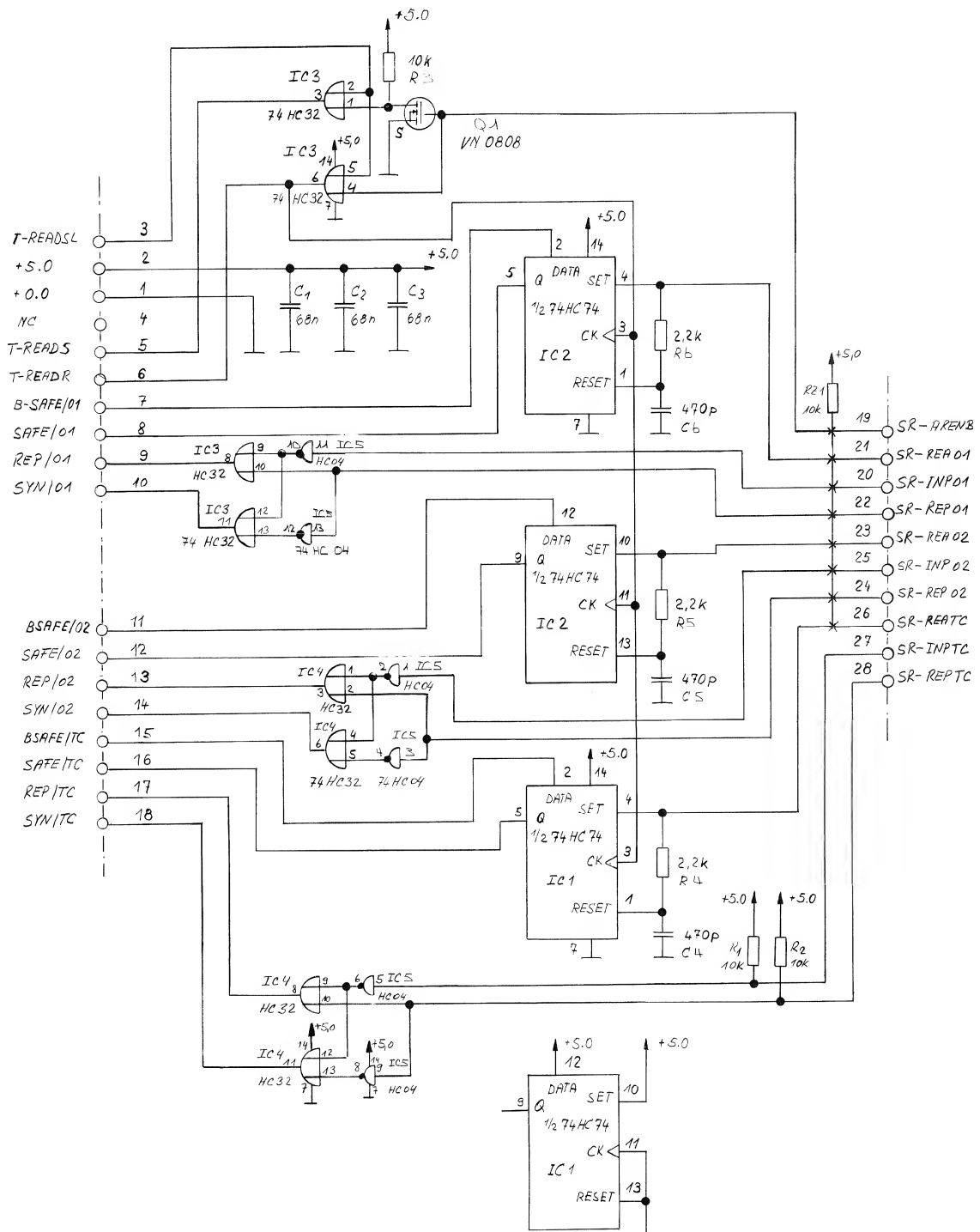
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	J...01	54.01.0305		AMP Nr.163.683-3	
	S...01	55.03.0302		see Note 1	
	S...02	55.03.0302		see Note 1	
	S...03	55.03.0302		see Note 1	

Note 1 - Push Button
Studer nr. 55.03.0302
Schadow nr.11320 01048
MANUFACTURERS: AMP=AMP Incorporated, Sie=Siemens

CHANNEL REMOTE INTERFACE 1.328.264.00

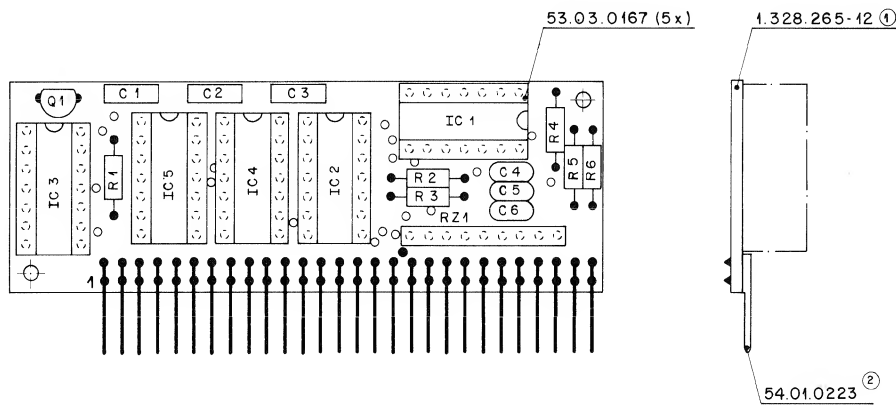


CHANNEL REMOTE LOGIC BOARD 1.328.265.00



① 11.08.87 HWE	② 14.08.87 BBT	③ ..	④ ..	⑤ ..
STUDER				PAGE 1 OF 1
CHANNEL REMOTE LOGIK BOARD (A1)				1.328.265-00

CHANNEL REMOTE LOGIC BOARD 1.328.265.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C.....1	59.06.0683	68 nF	10%, 63V		Note 1 - R-Network 8 * 10 kOhm, 2%, SIP 9 : Allen Bradley nr. 909 A 103 Beckmann nr. L - 09 - 1 - R 10k Bourne nr. 4609 M - 101 - 103 Dale nr. CSC 09 A 01 - 103 G Sprague nr. 256 C J 103 X2 FD Tama nr. NWS C 09 X 10 kOhm G Vitron nr. F9E 10 kOhm 2%					
	C.....2	59.06.0683	68 nF	10%, 63V							
	C.....3	59.06.0683	68 nF	10%, 63V							
(01)	C.....4	59.34.5471	470 pF	5%, 63V							
(01)	C.....5	59.34.5471	470 pF	5%, 63V							
(01)	C.....6	59.34.5471	470 pF	5%, 63V		MANUFACTURER: AME=AMP Incorporated, Fe=Ferranti, Mot=Motorola, Nat=National (Matsushita), NS=National Semiconductors, Ph=Philips, RCA=RCA Corporation of America, SGS=SGS/Atee, Six=Siliconix Ti=Texas Instruments, To=Toshiba.					
(00)	IC.....1	50.17.1113	MC74HC113N	Ph,Mot,NS,RCA,To,TI,SGS							
(01)	IC.....1	50.17.1074	MC74HC 74N	Ph,Mot,NS,RCA,To,TI,SGS							
(00)	IC.....2	50.17.1113	MC74HC113N	Ph,Mot,NS,RCA,To,TI,SGS							
(01)	IC.....2	50.17.1074	MC74HC 74N	Ph,Mot,NS,RCA,To,TI,SGS							
	IC.....3	50.17.1032	MC74HC32N	Mot,Nat,To,Ph,RCA,TI,SGS							
	IC.....4	50.17.1032	MC74HC32N	Mot,Nat,To,Ph,RCA,TI,SGS							
	IC.....5	50.17.1004	MC74HC04N	RCA,Ph,NS,Mot,To,TI,SGS							
(00)	IC.....6	50.17.1004	MC74HC04N	RCA,Ph,NS,Mot,To,TI,SGS							
(01)	IC.....6		not used								
(01)	Q.....1	50.03.1505	VN 0808	Fe,Six		CIS-pincontact 7pol., (4 pieces) AMP CIS-pincontact 7pol., (4 pieces) AMP					
(00)	P.....1	54.01.0427									
(02)	P.....1	54.01.0223									
	R.....1	57.11.4103	10 kOhm								
	R.....2	57.11.4103	10 kOhm								
(01)	R.....3	57.11.4103	10 kOhm			see note 1					
(01)	R.....4	57.11.4222	2.2 kOhm								
(01)	R.....5	57.11.4222	2.2 kOhm								
(01)	R.....6	57.11.4222	2.2 kOhm								
	RZ.....1	57.08.4103									